The Builder.

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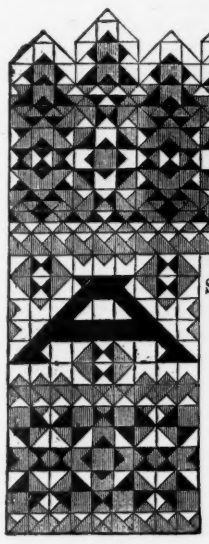
*The Coal Question a Serious Subject.**



SUBJECT of this nature, if investigated at all, should be approached in a grave and serious manner. We cannot accuse the authors of the "sub-reports" of trifling with their several subjects. But the interest and value of the matter collected, is frittered away, instead of being augmented, by each succeeding distillation; until in the ultimate Report of the Commissioners, which is that to which the public look, it becomes absolutely *nil*; or, in fact, assumes a negative value, as tending to show that nothing sensible can be said on the matter. Now it so happens that Professor Jevons published his work "On the Coal Question" in 1865, and that he there gave an estimate of the consumption in 1871, which has been almost exactly verified. Here, then, is a statistical expectation, which certainly deserves much more respectful treatment than to be put on all-fours with the optimist speculations which we have just dissected. Indeed, when it is borne in mind that, while the general population of Great Britain may be roughly said to double itself in a century, the population of the larger towns, the great consumers of coal, tends to double itself in less than half that period, it would seem as if the most probable error of Mr. Jevons would be in defect, rather than in excess. In support of this view it should be remarked that the returns for the ten years from 1859 to 1869 show a rate of increase much nearer to 4 per cent. than to the 3½ per cent. taken by Mr. Jevons.

In face of the protest of Sir Roderick Murchison, we must treat the question of the existence of workable coal, beneath the cretaceous and other secondary rocks in the South of England, as one which it is impossible, at present, seriously to discuss. The most salient points, therefore, which we consider that a competent reporter would have elicited, from the inquiries and evidence brought before us, are these.

The deepest colliery in England has a shaft of the depth of 2,376 ft., which is still being sunk. From the depth of 1,800 ft., to that of 2,376 ft., the increase of temperature becomes more rapid than is the case in the first 1,800 ft. The temperature of the earth, in this shaft, at the depth of 2,376 ft., is 92° Fahr., or 4° higher than that which would result from the *data* relied on by the Commissioners, but within 1° of the rate which we have ourselves adopted. At a depth of 2,706 ft. (neglecting the disparity of increase above shown to exist), the coal in this pit would become unworkable, without some as yet uninvented aid to the respiration of the miners.

Some of the Belgian coal-mines are stated to be carried deeper than any in Great Britain. At *La Mouille longe*, a boring was continued for four years, from 1853 to 1857; and the enormous depth of 920 mètres (or 3,017 ft.) was arrived at, without passing out of the coal measures. The Commission has not thought it worth while to seek for the practical test to which their theories might be put, by ascertaining the facts of the Belgian mines. The rate of increase of temperature indicated by this boring, is considerably higher than were the highest assumed from English *data*, and a variation in the rate, at increased depths, also results from the experiments.

In the Monkwearmouth Colliery, at a depth of 1,640 ft. from the surface, the physical powers of the miners begin to flag at a temperature of some 80° Fahr. Medical evidence is not required by those who are familar with the effect of the summer heat of Egypt, of Algiers, or even of Italy, Portugal, Spain, and the South of France, on the English constitution, to inform them that the rise of every single degree above 84°, is accompanied by a sensible loss of the power of exertion. This temperature may be expected at the depth of 1,920 ft., and with every additional nine or ten fathoms, additional difficulty, exhaustion, and consequent cost are experienced by the miners.

It results from this view, that our national anticipation of a successful winning of our coal, at a depth much exceeding 2,700 ft. must depend on the result of a method to which the Commissioners have alluded, without seeming to be at all aware of its crucial importance. It is to the introduction of pneumatic machinery, that we are indebted for the completion of the Mont Cenis tunnel; not only on account of the mechanical advantage thus obtained, but also in virtue of the effect on the air of the tunnel, produced by the constant escape of the compound air that is forced in to work the machines. Mr. Lindsay Wood gives evidence that the air escapes from coal-cutting machines at a temperature of 7° Fahr. below freezing. But if, by the employment of such machines, or even by the introduction of special pneumatic arrangements for the purpose, the air would be so reduced in temperature as greatly to extend the zone of depth penetrable by the miner, all mines infested by fire-damp, or choke-damp, would be excluded from a benefit inconsistent with that voluminous ventilation, which alone can adequately dilate, and sweep away, the fatal gases. It is characteristic of the Report that it does not refer to this most important question. The "Sub-report of Committee A" contains a brief paragraph on the subject. The value of the collateral evidence obtainable at Mont Cenis, does not seem to have occurred to any of the reporters.

The only condition, therefore, from which we can at present calculate, with any practical wisdom, on the productive working of our collieries at a depth beyond 2,000 ft., is that of an adequate supply of air of a lower temperature. It would be possible, even in the summer, to deliver a ventilating current of a temperature little, if any, above 50° Fahr. at the entrance of the galleries at a considerable depth. But the deeper the shaft, the longer, on economical grounds, must be the working galleries, and the more will the temperature of the ventilating current be raised, by passage through the mines. This rise in temperature, which is somewhat unintelligibly alluded to in the Report, appears to be directly as the length of gallery passed, whatever be the volume of the current. It is rapid, of course, in proportion to the differences of the temperatures of the earth and the current, but is comparatively unaffected by the velocity of the latter; but any attempt to lower the temperature of a mine, by giving double rapidity to the ventilation, while it requires eight times the power, produces but inconsiderable results. In Rosebridge Colliery, a column of air was raised 19·5° Fahr. in a course of 3,140 yards. The earth temperature here is only 80° Fahr. The results of such a length of passage, through galleries of 10 or 15 degrees higher temperature, would be far more marked and unmanageable.

Without undergoing the labour of remodelling details, on a plan which the Commissioners ought themselves to have regarded at least as an alternative, we are yet in a position now to state that the available quantity of coal on which we can, with any prudence, depend, must be very far less than the 146,480 millions of tons which the Report states "may be reasonably expected to be available for use." Instead of calculating the contents of a zone of 4,000 ft. in depth, we see that we are only justified in expecting to penetrate (with our present experience, and at anything like our present cost) to a depth of some 2,700 ft.; which is 324 ft. deeper than our present deepest shaft. At, or even above, this depth, the soil is of the heat of the blood; and the rapid heating of the air, according to our present best methods of ventilation, would be such as to render workings, of a length at all proportionate to the expense of the shaft, quite intolerable for human labour. Besides the 13-40ths thus to be deducted, a further allowance, undefined but considerable, must be made for poor coal, and for seams above 12 in. in thickness, but too thin to be profitably worked at a great depth. Thus, for instance, in the Somersetshire coal-fields, the total thickness of coal in forty-six seams is only 98 ft. 4 in.; giving an average of 2·13 ft. for a seam. In the Golden Valley collieries, a depth of 1,920 ft. has been reached, and the cost of bringing the coal to the bank is said to be about 8s. per ton. It is thus clear that an effort to win coal from a considerably greater depth, out of the 6,000 ft. or 7,000 ft. of which these coal measures consist, is likely to be counterated by commercial considerations. The modest term of 4,219 years for which this district will be able, in Mr. Prestwick's opinion, to maintain a yield equal to its present product, thus becomes a vanishing quantity. No engineer, with all the latitude of estimate with which the profession are sometimes reproached, could be justified, on the evidence adduced, in making the probable quantity of available coal, in the coal-fields of the United Kingdom, reach the amount of 100,000 millions of tons. The 110 years which Professor Jevons allows for final exhaustion must be, in common prudence, proportionately diminished in duration.

The check upon consumption that will be effected by a rise in price, is another of those essential elements of the question which are ignored by the Report. But for a hint on page xviii, it would seem as if the Commissioners were not aware that such a commercial question had any existence. This hint only makes the neglect still more glaring. There are many reasons to lead us to expect an immediate increase in the price of coal. To say nothing of the nominal increase, due to the steady influx of gold, we may remark, on the one hand, the uneasy feeling among the coal-miners, and, on the other, the mode in which winning is becoming more costly and hazardous, in such cases as those of the Golden Valley and the Monkwearmouth collieries. Whatever be the reason, there can be no doubt that the Commissioners, to use their own language in a note that forms an awkward comment on the text, "are taking the most favourable view in reference to deep working that the evidence will possibly allow" (p. 82). In fact, the idea of the propriety of that course of action on which Committee D (p. 118) so *naïvely* plume themselves that they "have done all in their power to allay the fears of those who have thought that the national supplies of fuel must terminate," appears to have been the real motive of the Report.

* See p. 2, *ante*.

Such a mode of dealing with the subject is neither creditable, wise, nor honest. Great expense has been incurred, five years of time have been consumed, a mass of evidence has been collected, and the Houses of Parliament are presented with a report which blinks the main points, is either an absolute nullity, or is inconsistent with the evidence, and which acknowledges, in a note in small print, that its starting-point is contrary to experience. Showing us that coal cannot at present be economically worked at a greater depth than 2,700 ft., and that no mine in this country is worked within 324 ft. of that depth, it assumes a workable zone of 4,000 ft. in depth! It places in contradiction to its conclusions, the opinion of our highest authority, himself a member of the Commission. It neglects altogether the evidence which is attainable in Belgium, and in the Alps, on some of the most important physical questions that affect the subject. It ignores the commercial question, the very bones of the matter, altogether. It tries to make things pleasant to the public; and it does so with a feebleness of utterance which it takes fifteen men to attain. No single writer would have had the courage to take the responsibility of such a report; no professional member of the Commission, if the matter had been left in his hands, but would have given us more reliable advice. The vice of referring such a matter to a numerous committee, presided over by a Cabinet minister, who has not the experience, and who ought not to have the time, to deal with the subject, is illustrated to the utmost. The opportunity of drawing up what would not only have been a State paper of the first class, but something more,—a permanent chapter in the physical, industrial, and commercial history of mankind,—has been frittered away. We are presented, under a high-sounding title, with a result neither reputable nor reliable, and we cannot repress the feelings of humiliation, and of disappointment.

PUBLIC IMPROVEMENTS IN PARIS AND LONDON.

SIR JAMES PENNETHORNE.

AT a meeting of the Royal Institute of Architects, on the 18th ult., Mr. Arthur Cates read an interesting and valuable Biographical Notice of the late Sir James Pennethorne, which necessarily included reference to the numerous schemes for the improvement of the metropolis with which the subject of the memoir had been connected, and produced a discussion that may be usefully reported.

In 1832, said Mr. Cates, Mr. Pennethorne was, in consequence of the experience gained by his connexion with Mr. Nash, employed by the Commissioners of Woods, and commenced to devote his attention to devising plans for the improvement of the metropolis. The great works which had been carried out under the inspiration of Mr. Nash, and by which the West end of London had been in fact created, were completed. The source from which the funds, lavishly but wisely expended, had been derived, was no longer available; and a Select Committee of the House of Commons having, in 1838, approved and recommended for adoption the plans submitted by Mr. Pennethorne for metropolitan improvements, he was (with Mr. Chawner) appointed to carry them out,—not, however, as designed by him, but trimmed and pared down to satisfy the requirements of economy; and although the four streets authorised by the Act 3 & 4 Vict., cap. 87,—viz., New Oxford-street, Endell-street, New Coventry-street, and Commercial-street, Spitalfields,—have proved of the utmost service to the circulation of the traffic of the metropolis, it is now certain that could his enlightened views have prevailed over the narrow spirit which influenced the decision on his plans, the metropolis would not only have been greatly benefited, but improvements greatly needed, and now rendered almost impracticable, would have been carried out at moderate cost. Until the formation of the Metropolitan Board of Works (1855), he was constantly engaged in devising schemes for improvements, which were more or less advanced, some even having been brought into Parliament; but all general projects fell through from the difficulty of providing the necessary funds, a difficulty which is now removed. Besides the formation of the new streets, and other improvements, such as those at Pimlico, Kensington Palace Gardens, Windsor High-street, &c., he carried out Victoria Park, Kennington Park, and Battersea Park; the works of the latter, after many years of delay, having been hurried on in a manner which prevented the complete realisation of his design. The scheme for a northern park, which in 1852 was proposed to be formed under the name of Albert Park, was fully worked out by him; and had funds been available, and the project realised, would have added largely to his reputation as a landscape gardener.

In the course of the discussion which followed, Mr. Edward Hall, visitor, said,—I wish particularly to direct further attention to the difficulties in which Mr. Pennethorne was constantly placed in treating Government works. During the whole time those works were under consideration, or were being carried into effect, he was thwarted in a manner which one could hardly conceive without close study of the subject, such as, I may say, I have myself given it. You will find some of the results of those difficulties in the line of Bow-street and Endell-street, and in that of which Coventry-street and Long-acre were to form part. If those lines had been carried out as Mr. Pennethorne designed them, we should not have had that corner which there is, where Coventry-street joins New Coventry-street, where stands the restaurant called the "Cremorne Branch," jutting out and interfering with the direct route of the traffic. We should have had a broader route, and there would not have been the danger that there is on every opera night, in Coventry-street. Nor would there have been the projection of the corner of Drury-lane and Great Queen-street. We should have had a tolerably straight line, taking in Coventry-street, Long-acre, and Great Queen-street, without the present twisted junctions. The actual defective arrangements were owing to the excessive anxiety for diminution of expense, and to the absence, in Mr. Pennethorne's superiors, of his forethought as to future requirements, and his judgment as to modes of proceeding. Thus, only one side of what is now Endell-street was dealt with; and the other side remained as inferior property, whilst there were formed the awkward turns at the north and south ends of the street, instead of the line being made straight from Wellington-street to Bloomsbury-street. But it will surprise those who have not paid attention to the history of this subject, to be told that it was argued by recognised authorities in these matters, that a crooked line was better than a straight one. It was maintained by Mr. Higgins, a surveyor of the day of some eminence, that it was much better that the traffic should take a turn in the case of any crossing of streets than that it should cross at right angles. The consequence was that the suggestions of Mr. Higgins and of Mr. Richard Lambert Jones, the latter a great man in the City in those days, were preferred to those of Mr. Pennethorne; and it was also owing to their influence that Middle-row, Holborn, was allowed to remain so many years as it was.

Professor Kerr.—We lost in the late Sir J. Pennethorne a man of special ability and special education, who seems to have devoted his lifetime,—and that apart altogether from considerations of specific employment,—to the great question of the improvement of the metropolis, and not merely its improvement in the sense in which the phrase is generally used,—such as merely cutting a new street through a back slum, and making a new line of thoroughfare,—but, as far as he dared, the architecturesque improvement of the metropolis generally, which is a consideration of so much importance in London, as compared, for example, with Paris. There is a question which I have often heard asked, but have never yet heard properly answered, viz.:—Why is it we in London find it utterly impossible to do as the Parisians have done with regard to their streets? We are richer than they. We have greater necessities with regard to traffic. The property affected, I have been told on the best authority, is not, as many of us may have supposed, more valuable than theirs. And yet we find they are able to cut straight lines in the precise direction in which they are felt to be desirable, and so to form grand thoroughfares through Paris in all quarters; and though it may be the fact that embarrassment has ensued, yet there is no appearance, even in this the darkest day Paris and France have ever seen, of the dreaded result of an actual crisis. I have always felt disposed to consider that money laid out in the improvements of a metropolis is money well invested for the people. True, it may not bring a direct return in the shape of a money profit, but it brings profit in many an indirect way, which makes the outlay what is called a successful investment; and I think it is a pity our financiers and public men of business are so unwilling to take that view of the question. When a common tradesman builds new premises, or puts a new shop-front into his house, he does not expect to get a direct return for it in money. He makes his place more attractive and convenient, and he knows that his business will improve in various unexpected ways as the consequence; so that he makes it answer on strictly businesslike and financial grounds. In the same way I contend the public of the country, looked upon as a community in business, will find it a judicious investment, and not a mere waste of money, to pursue the architectural improvement of those great centres—and particularly London—in which business is carried on. By recent arrangements, as we know, the future improvements of London—at least, in their purely utilitarian bearing—are to be a portion of the operations of the Metropolitan Board of Works. The question, however, arises—who is to take the initiative in those projects which such a Board can scarcely be expected to initiate. Our First Commissioners of Works, we architects may be excused for suggesting, are in this view of the case of no use whatever. It is notorious that our First Commissioners, one after another, have been mere politicians, who, having what is called a claim upon office, have been put into that particular position to work their way up, if possible, to some higher post in the scale of dignity. I humbly submit that is not the best way in which to deal with the architecture of London, or with the outlay of the public money, in any kind of building; and I think it may possibly be ultimately found to be necessary—I hope it may—to have something like a proper and responsible professional authority in connexion with the Government and Parliament, which shall take into consideration all questions of the kind; and especially those which affect Government property, and the great thoroughfares in which the Government buildings are situated, as in the case of the Whitehall quarter; and I venture to say it is impossible to accomplish anything upon a dignified scale, unless there is some such agency provided to initiate intelligent proposals with something like authority. I must say the Metropolitan Board, so far as it has gone, in street improvements, has succeeded to a greater extent than many of us supposed possible a few years ago. I think we must all agree that that body deserves especial credit for success in respect of the several grand lines of thoroughfare, which have recently been opened. But I think there are some things which the Metropolitan Board cannot be expected to do—which the Government must do if they are to be done at all; and the question is a most important one,—how the initiatory steps are to be taken, now that the office of Government architect is swept away. I do not see in the policy of the present First Commissioner, or in the new machinery of the Office of Works, anything approximating to such an agency as would serve to initiate public works in an efficient manner.

Mr. G. Herbert West.—I would remark, in reference to the observations that have fallen from the last speaker, that in my opinion the different conditions in the laying out of new streets in London and Paris arise not so much from differences in the cities themselves as in the Government and the nature of the people. In this country we can never expect to have an autocracy such as that under which Baron Haussmann carried out the improvements of Paris on so grand and gigantic a scale, being seconded by an irresistible law of expropriation, which served more especially to make the fortunes of many who were engaged under it. The first plans carried out were those for streets which were not designed by M. Haussmann, but which were decided upon under the rule of Louis Philippe and the Republic. The plans were divided into three sets or networks, which we might characterise as the really desirable, the useful, and the extravagant. The first, which had been decided on before 1859, comprised the Central Markets, the Boulevard Sebastopol, the Rue de Rivoli, and the opening up of the city. The second, decided on in 1859, included the Boulevards Prince Eugène, Château d'Eau, and Malesherbes, &c., Pont de l'Alma, Avenue Marbeuf, &c., Rues de Rome, de Lafayette, &c., the Parc Monceaux, and the Bois de Boulogne and Vincennes. The third network comprehended all the streets round the New Opera, *i.e.*, the Rues Halecy, Auber, Scribe,

Chateaudun, Quatre Septembre, &c., Boulevard Haussmann, &c., and on the left bank, the Boulevard St. Germain, and the Rues de Rennes, Guy Lussac, Monge, &c. The first set cost 272 millions of francs, the second 410, the third 615. Total, 1,297,000,000 francs, equal to 51,880,000*l.* Before the Boulevard Sebastopol was undertaken, there had been great discussion as to whether the existing streets, St. Denis and St. Martin, should be widened by buying up the houses and setting them back—whether an entirely new thoroughfare should be made. In 1859, partly perhaps for military reasons, the preference was given to the new boulevard. It was argued that interference with existing thoroughfares did more harm than good, and damaged trade, and that it was better to buy up houses in the back slums between two great streets, and drive a new boulevard through them. The difference in the nature of the traffic of the two cities is such that in London you cannot drive streets at haphazard through old quarters of the town and be sure of their bringing in a profit upon the outlay. In Paris, if they form a new street in which the ground-floors of the houses are shops, as is almost invariably the case, they are sure to meet with occupiers, and the upper floors will let in flats. So there is sure to be a good return on the money spent. But if you were to drive a new street through Drury-lane, you may be quite certain no one would live there; shop-keepers would not take the shops, and the houses would not let in flats, or as respectable lodgings, but the street would remain as poor as before. In Paris the tradesman occupies the shop and the rooms behind it, or at the top of the house, and in intermediate portions you have all sorts of people living, from the most wealthy to the poorest; and you are sure to have a traffic through the street, for Paris is a round city, while London is a long city. Our great avenues of traffic are by Oxford-street and the Strand; that in the other streets goes in no particular direction, but in Paris wherever you drive a new street you are sure to have traffic through it, since it forms one of the radii of a circle. This is clearly seen in comparing the omnibus maps of Paris with those of London. When a railway was proposed for Paris similar to our own Metropolitan Railway, it was objected to because the traffic was not sufficiently definite in its direction for it to be likely to prove of real service. In London you may have passage streets, but nothing more, however good the houses may be. In Paris you are certain to have a street more or less of palaces: some of the streets are very well inhabited, and all more or less bringing in good rents, and you cannot make sure of that in London. Since the Government have taken up the system of renouncing the employment of architects, you cannot have men in London corresponding to Baron Haussmann, or the present préfect of the Seine, with a body of architects working under him. In short, the differences of conditions are so great that you cannot fairly compare the two cities.

Mr. Eastlake.—What is the difference in rents?

Mr. West.—Enormously higher in Paris. There is one street built in the time of Louis Philippe upon the London principle, of setting back existing houses, I mean the Rue Rambuteau, which runs through the old part of Paris. The Boulevard St. Michel was certain to be a great line of traffic. The Boulevard Haussmann is perhaps the only great street without shops which could be compared with our streets of private houses. It is only half finished, and other streets have been left in such a state of incompletion that you cannot take them into account. The Boulevard St. Germain has been begun at both ends and in the middle, but left unfinished, because it will require twelve millions of francs to buy up the École de Médecine to complete it. Some of those streets may be gone on with, but I should scarcely think M. Thiers will finish the streets round the New Opera.

Mr. Hall.—The real reason why in Paris the improvements are, as in my opinion, so much more successful than in London, is that in the former city there is preliminary design or *plan*. That is to say, there is general plan and principle observed, dealing with the whole of the French metropolis. In London there has been no general plan; for even Mr. Pennethorne's plans were only applicable to a small portion of the area of the metropolis, not to repeat mention of the fact that they were made under the greatest disadvantages. The principle in Paris has been that which was observed by Wren in making his well-known plan for the improvement of the city. The principle in each case was this:—Decide what shall be your centres, and then form main lines to and from them, and direct lines. Every capital city has three or four main centres, such as a commercial centre, a centre of pleasure, a fashionable centre, and a centre of government; and it is necessary to decide upon these or to treat these as having been decided before you arrange your main lines. In Paris, pleasure is of greater importance than it is in London. Therefore, having decided to remove the Opera House, it was a main point to make routes converging to the place fixed upon as the site of the New Opera. I disagree with the last speaker in what he said with regard to the utility or non-utility of the streets round the Grand Opera. I think those streets have been well devised. I may mention, for example, the Rue Lafayette. Any one looking at the plan of Paris will see that the principle adopted by Wren has been carried out, though for the whole metropolis and suburbs, instead of the design being confined to one portion of the metropolis. I agree with the gentleman that some of the recent improvements of Paris are almost extravagances. No doubt a great deal has been done to keep the population employed. Still there is in Paris, I believe, a much greater return for the expenditure than people here are in the habit of supposing; and I am inclined to think when there is supposed to be a difficulty in getting occupation for buildings in new streets in London, it is forgotten that a part of the general demand of the present day for places of residence is one for residences for the middle and "lower middle" classes; but in too many cases we erect comfortless buildings, badly planned and ill-constructed by speculative builders, and there is no inducement to occupy them. People have been driven to reside in the suburbs; but there is a growing feeling of disadvantages which attend suburban residence. If we had properly planned buildings in properly planned streets, no doubt they would be occupied; and the improvements would give that return on the investment to which Professor Kerr has so well alluded.

Mr. R. Phené Spiers said:—As far as our experience has yet gone, there seems to be a decided distaste on the part of the English public to living in flats. There are some in Victoria-street, and though they have been built twelve or fourteen years, I am not aware that there has been such a demand for that kind of lodging as to call for a fresh supply. I can bear out what Mr. West says as to the facility with which shops and apartments in new streets in Paris are taken possession of. On the appearance of a new street, with the road hardly finished, and while the street itself is not much known, it is natural to suppose that the shops would only be taken by an inferior set of shopkeepers, who commence business somewhat in the way of the American stores, but it will be found that, after the lapse of two or three years, the shops are tenanted by respectable tradesmen; much money is laid out on them, and they form an additional attraction to the fine architecture of the street which has been opened. The rents of these flats far exceed the rent of our houses in London, even in the suburbs of Paris. In the outside of the outer line of Boulevards, a suite of five or six rooms on the third or fourth floor cost more than a twelve or fourteen-roomed house in the centre of London; and when you come to the Boulevard St. Michel and Boulevard Strasbourg, the prices obtained are immense. To a certain extent we may set against that the expenses which Londoners incur by living in the suburbs, in going to and from town daily. Some live at distances which cause an additional expense of 20*l.* or 30*l.* a year in railway or cab fares, and that does not include the family travelling expenses; and if these are added to the rent of the house in the suburbs of London, it would bring it up to about the same price as is obtained for the flats in Paris. The French have been accustomed to be satisfied with a much smaller quantity of everything than we are. They use very little water, and believing that they can wash themselves with the corner of a wet towel, they do not see the necessity for a bath; and the same with regard to food and everything. The rooms are only just as large as is necessary. They have not large families, or it would be difficult to understand how they could manage with such small accommodation. As a rule, these flats contain not more than a quarter the space which there is in our English houses.

Mr. E. R. Robson, Fellow.—In reply to the inquiry why it is that in London we cannot carry out public improvements on the same comprehensive scale as has been done in Paris,—it may be remarked that in this country we are subject to the provisions of the Lands Clauses Consolidation Act of 1845, which are applicable in all cases of public works and improvements, just as in the case of railways. The result is that in the case of opening out new streets you cannot obtain just the amount of property which you require, and no more, if there is any objection on the part of the owner. What has been done in the way of improvements in London has been done on a pottering though expensive scale. In Paris they have a fixed tribunal to which all cases of purchases are referred; but under the Lands Clauses Act such a thing as taking the exact quantity of land you want is impossible. Two points have been stated with regard to the laying out of streets: one is, that an absolutely straight line is best. For my own part, I think that is questionable. In my opinion, where the bulk of the traffic is of a heavy description, a slight *détour* is preferable to crossing streets at right angles. In Paris there is more light traffic than heavy. In making straight lines of streets we reduce the thing to the point of convenience, and art is nowhere. Take the case of St. Martin's Church: convenience would ignore such a thing, standing, as it does, partly across the line of St. Martin's-lane, but art did not. I do not myself hold with the notion that all new streets should be strictly straight lines. In Paris we find that every straight street requires an ornamental column at the end, and it is the column which is seen rather than the architecture of the street.

Mr. Arthur Cates, in replying, said,—I am not surprised that the discussion should have taken the course it has. The contrast, vast as it is, between the public works of Paris and those of London is naturally a subject of great importance; but those who have spoken in terms of regret at the difference beween what has been done here and on the other side of the Channel have forgotten one element. They have spoken almost as if this country was deficient in designers of taste and art. I protest that, while our rulers or those who have the control of these matters may be deficient in these points, there are plenty of men available who are competent to the task. The one great thing wanting has been funds, and in that respect London has been placed in a position different from Paris. Those who have not studied the map of London of 1805 can have no idea of the mass of tortuous lanes and miserable dens that have been swept away, where now we have valuable property, and some of the most important districts of the metropolis. The great work carried out by Nash which converted the narrow and tortuous lanes around Old Swallow-street into the present noble thoroughfare of Regent-street, and the great improvements round St. Martin's Church, Pall Mall East, West Strand, &c., were carried out at the expense of the State; and it having been decided that the land revenues of the Crown, from which the funds had been so wisely provided, should no longer be used for such purposes, the further progress of such works was suspended. I have indicated in my paper the manner in which it was desired to continue those improvements, but the only funds at disposal for the purpose were those arising from the coal duties, &c. For the works already executed, those dues were mortgaged for years, and further sums were obtained by further mortgage of those imposts. The funds thus raised were soon exhausted, and there were no means of raising other moneys. The policy of the Government had been to keep London in a state of helpless infancy, cut up into little districts, ruled as regards parochial interests by vestries, but without the power of combination and joint action, which alone could lead to the execution of works worthy of the metropolis. The constitution of the Metropolitan Board was a very great advance on this state of things. That Board in time acquired power to raise money by taxation, and we have seen the result of this control of funds, in the construction of new streets, projected many years ago, and the formation of the Embankment, which is a work equal to anything in Paris or any other city. We may assume that if London had been favoured with the means of raising money that existed in Paris, we should have had works which, if not equal in brilliancy, would have been equal in utility to anything in Paris. Paris has been more fortunate; the octroi, a ready means of

raising funds, was in full operation. At the end of 1852, the loans raised by way of annuity to meet the expenses of the occupation of the city by the allied armies in 1815 expired; but in place of the agitation which would have here arisen, to reduce the taxation, and sacrifice the great interests of the City to a paltry gain for the present time, the wise administrators pledged those duties for further terms, and by the fund so raised and further loans, based on the credit of the municipal revenue, commenced those great works to which allusion has been made. It was the large sums thus raised which gave the first impetus to the improvements carried out by Baron Haussmann. Then, again, in France the State generally acknowledges its obligations to the capital, by contributing one-third, more or less, to the improvements carried out, which affects localities in which the State and the whole country are interested. Thus the works around the Palais Royal and the east side of the Louvre were constructed by the aid of large contributions from the State. If you compare the two cities, you must do so on the same *basis*, and London will then hardly stand to disadvantage.

"INVENTIONS AND PATENTS CONNECTED WITH BUILDING."

THIS was the subject of a paper read at a meeting of the Inventors' Institute, on the 4th, by Mr. B. Fletcher; Sir A. Brady presiding.

Mr. Fletcher said,—I shall first take the entire *building* and work, thence to *details*. Probably I proceed in this form, as it is the usual course pursued in designing buildings, bearing in mind, too, the injunction by the poet,—

> "Consider what you undertake,
> And analyse it well;
> And ever work from *whole* to *part*,—
> Grand principle of *master* art,—
> That makes that work to tell."

Well, in what does the house of to-day differ from the house built 100 years ago. I must be understood to mean the usual houses which are being built all over the kingdom, and not as alluding to an exceptional house here or there.

It is wise to imitate the prudent tradesmen who just now are "stock-taking;" and I am afraid, if we take stock, and look upon the houses of to-day and those built some 100 years ago, like that I live in, we must say not merely that our predecessors built much stronger and better houses than we do, but also that the inventions and patents (grand as they are) have been so little utilised by builders, that even in conveniences the old houses will almost equal the modern. It is strange that this should be so, if one considers the almost appalling number of inventions and patents that yearly are granted. Take, for instance, this country, and the average number per annum during the last ten years: a little over 3,000 applications were made, and of these more than 2,000 were granted. The number applied for last year was 3,500, and of these, according to the average, two-thirds would be granted. Now see how slow Old England is. In the United States, for the year ending the 30th of September, 1871, 19,429 applications for patents were filed in the Patent Office (including re-issues and designs), and as many as 12,950 patents were issued. Yet again, startling as this is, we find that this number was not so great as that of the preceding year. I notice the fees received during the year by the United States Patent Office amounted to 671,583*l.*!

I cannot say what proportion of patents relate to buildings; but one sees from time to time in our professional papers a long list of such patents; so that, no doubt, the thought must arise in the mind of the public: why, then, are not these inventions and patents more used?

I will explain. A man, if he can invent something which will enable him to produce cotton ½d. per pound cheaper, or some machine which shall be a perfect substitute for hand labour in some department where the demand is unlimited, may out of such single invention amass a great fortune. The one condition of such success is that the article manufactured shall be in great demand, and that his invention has saved money in its production, or that he shall produce a better article at the old price, or that by his invention useless materials may be made available (for example, much iron is now used by the application of the *hot blast* that formerly was thrown away: I do not say to the improvement of the iron, but that formerly it could not be used at all). Now, you will notice in all cases the basis of large profit is from extended demand for the article. It is therefore evident that an inventor who turns his attention to patents in connexion with manufactures, has the prospect, if he succeeds, of larger profit than he who devotes himself exclusively to patents connected with buildings. This may account in some measure for the relative small proportion of inventions relating to building.

Having, then, shown that the inventive genius is somewhat allured from building-patents by the temptation of larger gains, a few words will be well to indicate the difficulties that beset those who, having devoted their time to this class of patents, succeed in producing a valuable and useful one. The architect who is building a house probably goes to see the invention,—likes it,—thinks he will try it,—hesitates,—finally probably decides against its employment, from fear that it may not be successful. Yet, I think, little blame can attach to him: if the invention succeeds, the merit is the inventor's; if it fails, all the blame falls on him, for selecting such a "fandangle, stupid thing:" such will be the language his client may use to him. He therefore has no inducement to recommend a novelty, as it cannot benefit him in his practice, and by so doing he may lose a client. Is it, then, to be wondered at that we are so conservative in our decisions?

Qui bono, you may ask, all this explanation if there is no remedy? Well, I have a remedy. It is the formation of a commission, with unpaid members, who should inquire into patents or inventions, when (and not till then) the results are being manufactured for sale, and should test them, and should also invite the opinion of all who use them; and these commissioners from time to time should report the result of their investigations. I would base their operations very much on the mode of proceeding adopted by the commissioners of the *Lancet*; and I think my hearers will agree with me, these commissioners have done much good. I feel sure that the commissioners I propose would be of great service if the gentlemen were carefully selected.

I have said that houses now are built very much as they were years ago. Go into any ordinary house in any of the suburbs of London, and what difference will you find? Why, the house is as nearly as possible a counterpart of any old house, except that it is not so strongly built. Shutters are gone, and perhaps instead of the sash bars (which, by-the-bye, some architects are now putting in their new works), a large square of plate-glass. In fact, the house when ready for letting usually has not *one* of the modern appliances.

This being so, let us consider what a house should be.

It should first have a good damp course, to prevent damp arising. Every room should have an air-flue to let the foul air escape, and those rooms where gas is burnt should also be provided with an external ventilator. The pipes from closets should be carried up in an inside recess, to prevent frost, and should be accessible by merely opening the wooden covering. The bells should also be so carried up. There should be a hydraulic lift where the house is large. Water, hot and cold, should be on the bedroom floors, and in the lavatories attached to the water-closets. Where cupboards are put, they should be fitted having regard to the use they will be put to. For instance: in bedrooms, they may be made like wardrobes. To see what is being done out of this country, look at the Americans. Take one of their houses: not a servant (or help, as I should perhaps call them) wanted upstairs, every room always ready except the dusting; the bed, a spring mattress (no making required); a tap to regulate the temperature of the room; washstand, with hot and cold water laid thereto, and waste therefrom; so that positively while we are quite helpless without our domestic servants, they can do everything upstairs without servants. Surely the picture I have drawn shows how much we have to do before we can call the Englishman's castle really a *home* fit for this century. Well may I quote those lines,—

> "So hard
> The growth of what is excellent; so hard
> T'attain perfection in this nether world."

In proceeding to details, the lecturer compared granite and marble, mentioning that the price of the "dark shap" supplied at the Midland Railway Terminus was 3*l.* per foot run, for the columns, which are 2 ft. 8 in. in diameter, and advocated where slate was used for internal work it should not be in imitation of marbles, but should be in plain tints, relieved with gold and colours, some beautiful specimens of which were produced. He mentioned the various kinds of stone-preserving processes, but would not express any opinion as to their merits. The new Midland Railway Station is being treated with Professor Church's process, and also with that of Mr. Ransome; and he also considered the patent stone of the latter, specimens of which were produced, worked with the chisel. He touched on fireproof construction, mentioning the price, inclusive of rolled joists and concrete, of the Dennett system at 4*l.* 4s. to 5*l.* 5s. per square for "model houses," and 5*l.* 5s. to 6*l.* 10s. for ordinarily-sized houses. Many specimens of moulded bricks he explained, with the machine for making them. As to concrete building, this formed an important portion of the paper, and he took great pains in showing its advantages and disadvantages as compared with the ordinary building materials. He stated the former to be cheapness, strength, and durability, rapidity of construction, and economy of space; the latter its liability to failure from the use of improper materials, or from the want of knowledge and proper care, and the limits which the material and method impose on architectural design and decoration. He objected to the imitations he had seen of stone fronts by concrete, with core of that material to form mouldings, and facing it with Portland cement. Such a method, he considered, would soon bring concrete building into disrepute. There is little doubt that concrete building, so far from being necessarily a "sham," may be made an admirable and useful material capable of perfectly legitimate treatment with good results. The different kinds of apparatus used in the erection of concrete buildings were treated of. Amongst the peculiar features of concrete buildings was mentioned that with regard to steps; four of Portland stone pounded to one of cement were stated as the proportion. The cost of these steps is about half that of Portland stone. Seven to one is the usual proportion for general building, but four to one is used for coring out for mouldings, and two to one where the projection is very great. An advantage in regard to sanitary arrangement was mentioned, viz.:—that it will take any number of flues for any purposes anywhere; so solid is the material, that flues may come within 3 in. of outer face. All fitting into vertical grooves must be avoided, as the swelling of the cement prevents the lifting of the apparatus. The new shaped core to chimneys was explained, which obviates the necessity of making the chimneys tapering, and it was shown that this prevented a series of recesses to catch and hold the soot. In roofing, the thickness of concrete should be 4 in. to 6 in., with thereon 1 in. of asphalte. He next alluded to Messrs. Hayward's latest invention in pavement lights, including the hexagonal and half prismatic lights, also to the square half prismatic light for filling in existing pavement lights to increase their lighting power. He produced seven different samples of sash-fastenings, all to prevent opening from the outside, some being cheaper, and some more effective than that recommended by Colonel Henderson in his official circular. He considered it was want of information on the part of Colonel Henderson, and showed how the one he recommended could be opened from the outside if the sash did not fit very closely. Many examples of locks and their fastenings, door-springs, and rollers, water-bars, casement fastenings, revolving-shutters, electric bells and domestic telegraphs, cottage ovens, stoves, lifts and hoists, dust-shoot boxes, pipes, paints and enamels, &c., were exhibited and explained. An ingenious letter-box was also introduced. And he concluded his remarks with this observation,—"I think, however, there is a grand future for architecture, but it must be by striving to combine in buildings all the scientific inventions of the day, to do so continuously and with judgment; and herein new forms will be created by the use of new materials, if only the desire be present not to be slavishly bound by precedent, but earnestly to strive to make the requirements of science express themselves in our works. Whilst, therefore, I contend no architect should have or invent any patent, or have any interest in any, for the reason that he may be tempted to use it when some better thing may have been discovered (and this merely from the natural love we all have for the children of our brain), he should be ever willing to experiment with all the inventions of others, and thus give them aid. I have learnt much while perusing my investigations, and if I but lead others to investigate for themselves, I am confident they will also learn much."

The discussion was adjourned to February 1st.

THE LAW COURTS.

SIR,—If the people of England do not get a good building for the central Law-courts of the nation, it will certainly not be from want of public discussion; and yet, if a great national establishment can be designed by public discussion, like an Act of Parliament, it will be a new era in the history of architecture, and England will be the first country that has been able so to dispense with architectural genius.

If the multitude of critics, with the approbation of the public at large, can produce a work of art, then surely the architects who built the celebrated works of old have lived to little purpose; and again, if the works so produced are satisfactory, and "the people's architecture" is the best, it will still be a matter for curious investigation why the architectural art should be different from other arts in that respect. We do not get our pictures painted and our statues carved by public competition, nor is the poet laureate selected by a committee upon poems, still less should we think of inviting public opinion for suggesting improvements to the artist in the course of his work.

Now, it appears to me that this difference in our mode of dealing with architectural works, as compared with other arts, is possibly one of the chief causes why that art has fallen in this country into a lower rank, and why its productions have been unsatisfactory. I cannot see why the same course should not be pursued in architecture as in painting; namely, to select an artist, and then, having given him his instructions as to the general extent of the work, to leave him practically unfettered as to the manner of carrying them out. This notion will, I have no doubt, appear to many to be a rather startling innovation upon our habits in this respect. We have been accustomed to think that every man knows exactly what sort of a house he wants, and that a majority of a committee must be able to say what sort of a building is required for any public purpose. But I suspect the truth is, that the public have never sufficiently considered the subject to be able to separate the idea of the requirements of the business to be done in the house from the idea of the mode of providing for those requirements. What architect is there who has not received a letter from the intelligent house-proprietor about to build, showing exactly how the back staircase could be added on for next to nothing, or how a corner, 5 ft. square, with a gas stove in it, could be easily cut off from the hall for his own snuggery; and yet, who cannot or will not say what is the traffic or business to be provided for in any part of the house.

There are instances to be found in the public buildings of our own country (and, indeed, of other countries) of the effects of this kind of interference with the architectural artist upon the buildings themselves; but of the results to the artists, the withering of individual genius, and the growth of a mere desire to please the popular taste, little is known or felt.

It is just this hampering of the genius of the architect which I think has been the main cause of the difficulties and disappointments connected with the Law Courts buildings; and, as an evidence of it, I may quote the very award of the judges on the competitive plans. This was to the effect that, as no one architect had precisely fulfilled the conditions laid down by the commissioners, they therefore selected that plan which most nearly did so, and combined it with the elevation most pleasing to themselves, and thereupon presumed that the most efficient building would be produced.

Now, is that a system likely to promote the growth of that independent, true artistic spirit which Mr. Fergusson says can be produced, if the architects and the nation choose it? Is it not in itself an argument why architects should be content to run along the groove of popular opinion, and cease to hope for any originality of thought?

And yet the judges were only strictly carrying out the instructions under which they acted, which were to select the plan that in their opinion best fulfilled the required conditions. It is to these conditions, therefore, that we must look for the fountain-head of the mistake. It is to these that I drew attention in a previous letter, which you were kind enough to publish in your periodical; and if you do not think the subject too much exhausted, I wish now to point out a little more in detail, what I consider to be the injurious effects of some of these upon all the designs for the law buildings.

The first and chief of them was, I think, the precise limitation of the area, both in extent and form. I will venture to say that for the business to be carried on there, and considering that it is acknowledged to be one of the largest collections of public buildings ever massed together, it was as small and as badly shaped a site as was ever appropriated to a public building. The area defined in the original instructions was about 900 ft. by 500 ft., the larger dimension lying approximately east and west. This is nearly the same as that occupied by the Houses of Parliament, but the latter is a long building of comparatively narrow depth, and with an open area about it, especially on the south side, which it faces. The Tuileries and Louvre together occupy a length of nearly 700 ft. by 300 ft. broad; but they face the south, and the interior is nearly one large square. The Escurial is one of the largest palaces in the world, being 650 ft. by 550 ft.; a great deal of the site is garden; it is in a sunny climate and isolated; whereas the site proposed for the Law Courts is shut in on all sides by private houses; and the number and character of the offices to occupy it is such, that the whole area must be covered as closely as can be done, and without regard to aspect.

All sanitary engineering is tending in the present day to the spreading of buildings in such directions and extent as shall insure the greatest amount of sun and air; and the absence of these two vital forces in any public building would, no doubt, be perceptible in the health and energy of the functionaries employed in them. Now, I consider it impossible that any architect can arrange the rooms required in the original instructions on that site, without having a great number of small courtyards into which the sun will rarely or never shine, and a great number of windows of rooms with a northern aspect. And why should it be so? If the nation wants a palace of justice in which to conduct one of the most important branches of its administration, why should not the nation ask an architect to define the space required for it, letting him take these sanitary questions into consideration, as well as the greater one of taking the opportunity of opening out a fresh lung in the metropolis; thus making the Law Courts an abode of cheerful light instead of one of damp and darkness. It is not the expense that would stop the nation, for that has never stopped it in doing what it considered to be right; and when we consider what the single towns of Belgium did to provide town-halls and cloth-halls, and what our own provincial towns are now doing for their public buildings, expense would hardly be an obstacle in a question of space for the Chief Courts of Law of the British empire. It would be better to secure the ground, and to postpone some of the buildings to a future generation.

The real difficulty is in the limitation which has been imposed, step by step, on each authority concerned: first, the Government fearful of debates; second, the Commissioners fearful of responsibility; third, the architects anxious to do something; and, fourth, the judges cabined and confined by the acts of the other three.

What, therefore, appears to be wanted to make the site a habitable one, in a sanitary point of view, is greater length east and west, so that the buildings can be arranged in such a manner as to allow the sun to penetrate at some time of the day into nearly every living-room.

The second important defective point which appears to me to be found in the instructions is the proposal to make a great hall the central feature of the whole mass. This idea originated, I have no doubt, from both administrative and æsthetic considerations. The lawyers felt that a central place, where everybody would be sure to find everybody else, would be an important saving of labour and anxiety to all concerned in the business to be daily carried on in these courts; and both lawyers and architects were taken by the idea of a grand feature forming a real as well as an æsthetic centre round which the whole mass could be grouped; and the architects, and especially Mr. Street, made the most of the idea, sacrificing certainly light and air, and in my opinion convenience and real æsthetic effect to it.

First, with regard to convenience. The law courts of England cannot be looked upon as one whole, like a palace or a State office, as far as their administration is concerned; they are only a collection of independent courts placed together for convenience of general intercourse. Each court or set of courts has its separate times and nature of traffic, and separate staff connected with it. And whatever the changes in the business of the courts relatively to each other, it is not probable that the independent character of each court will be ever much reduced.

The members of the legal profession naturally wish for the greatest possible facility for their passage from one court to another; while, on the other hand, for the orderly conduct of each court, it is desirable that they should be separated from each other. For a distinguished barrister, who has to make speeches in two courts within a few minutes of each other, they should be as close as possible; but it may be doubted whether the officers of the court or the suitors would be so desirous of proximity.

Then, again, each court has its peculiar wants in accommodation, and the concentration of them in close symmetry would interfere with such peculiarities at the outset, and with any little additions or alterations that might be hereafter required; and who will be bold enough to say that such will not be necessary in these days of change? For this reason alone ample space should be reserved round each court or set of courts.

Then, again, a great hall may be too great—for convenience in finding people. All the persons concerned in all the cases in all the courts would be mixed up together; and when they amount to some hundreds, a single room would probably not be so convenient as a long gallery, distinctly divided into compartments: the access to such a gallery from each court might be made easier than into one central hall, and the persons concerned with each court would be separated.

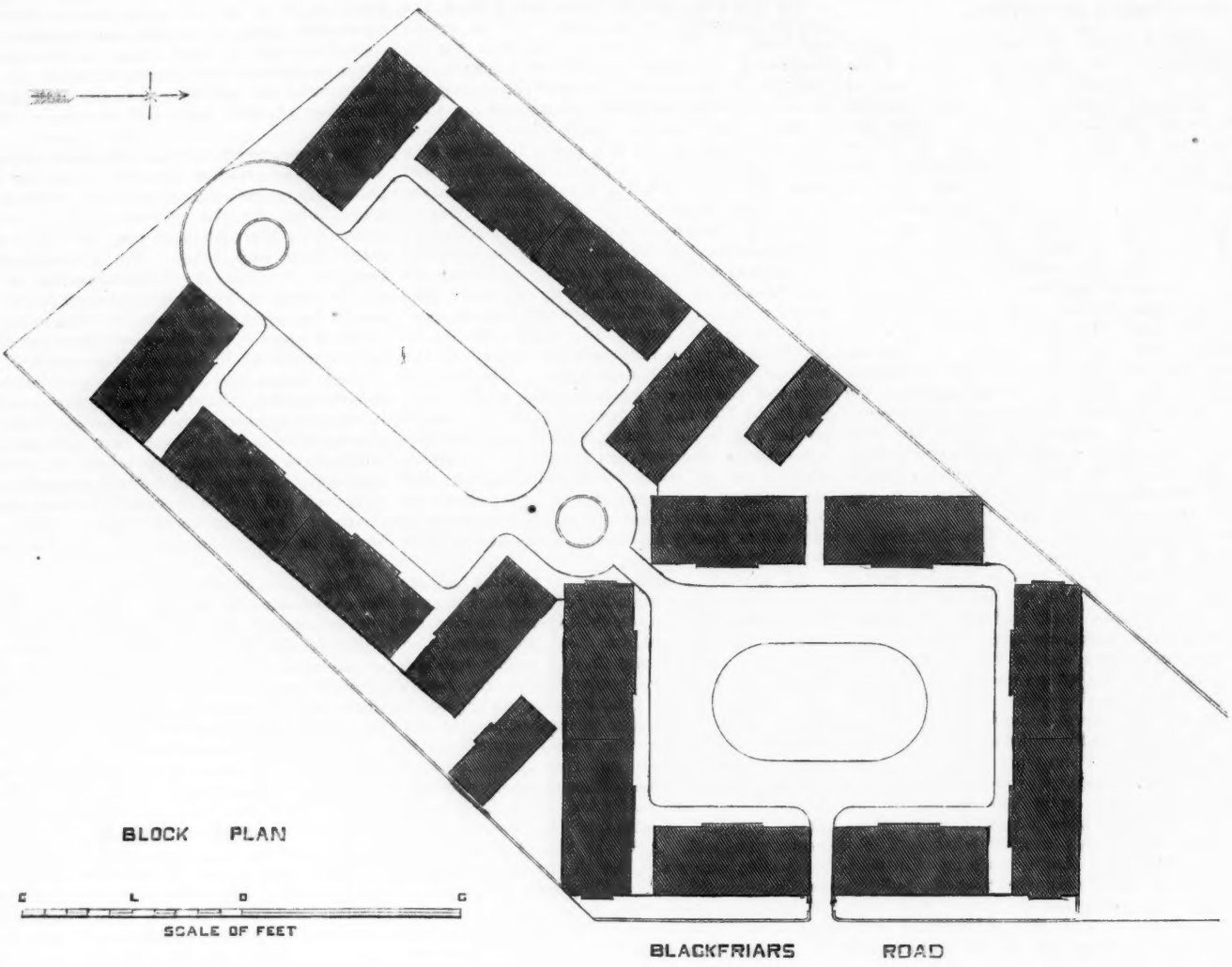
Lastly, concentration means an additional number of stories, and that means exclusion of light and air, and extra labour for the employés and the public.

Then, with regard to æsthetic effect. If I may venture, after the numerous and learned professional criticisms that have lately appeared in the public papers, to touch upon such delicate ground, I should say that the idea of a mass of building closely, concentrically, and symmetrically disposed round a central feature, is contrary to the principles of Gothic architecture, and more in accordance with those of Classic architecture. In the former, each building or block might be symmetrical, but the assemblage of them would not be necessarily so, as each would be designed to suit its own particular object. The character of Gothic architecture more accords with the idea of a collection of partially-detached buildings, and extending over a greater space than in Classic architecture; and therefore, from this point of view, the Gothic style is particularly suited to the Law Courts buildings. There are no examples of ancient Gothic establishments, I believe, to guide us in this particular case. The great ecclesiastical establishments consisted of those detached buildings whose independent symmetry would have been marred by too close juxtaposition. But the later styles of Gothic would doubtless afford a groundwork for an assemblage of independent buildings into one connected mass, such as the Palace of Justice ought to be. None of the architects, however, appear to have tried those styles.

Then, if I may venture a step farther, and enter upon the still more debatable ground of the moral effect of a design: it appears to me that, if the Courts of Law are to some extent independent tribunals, that idea should be visibly expressed in the building. All persons should be able to perceive that it is a collection of courts, and the actual courts themselves should be the most prominent features throughout the whole mass. But a central hall is quite contrary to this conception of the design; for it makes it simply one huge place of assembly, one gigantic forum or basilica, to which various tribunals are attached.

Thus it appears that on all four counts—moral effect, æsthetic Gothic effect, convenience, and health—the verdict should be against the central hall.

It is true that I am now writing in ignorance of the plan of Mr. Street's latest design. The area, and its shape, and the required accommodation, may have been altered since the original instructions were issued; but judging from the elevation of it that has been published, the general idea is only a modification of his original one; and, it is to be feared, a modification made, not in accordance with Mr. Street's own wishes, but to meet the views of the Government. But supposing the accommodation required to have



PEABODY SQUARE, BLACKFRIARS ROAD.

been so reduced as to do away with some of the objections I have raised, what provision is there for future extension, such as will inevitably be required as the population increases.

I venture to put forward those doubts affecting the whole proceedings connected with the Law Courts buildings, as questions of professional art. As a constructor of some years' practice, I wish to protest against any designs limited by such instructions, as affecting the proper responsibility of an architect, and being incompatible with satisfactory work. And I hope that the leading architects of the country, who are all interested, and to some extent responsible, in the matter, will combine in requesting the Government to give an opportunity for a design to be made free from such trammels. Otherwise I fear the same result will happen to our latest and largest public building as has happened before in one or two such cases in this and other countries; that when it is half done, and a new Government in power not committed to the decisions of their predecessors, the building will be pulled down to make way for one on larger principles; and then not only will the time and money have been wasted, but it may be impossible to produce such a perfect work as could now be erected.

And I calculate on the support of Mr. Street himself to such a motion, as I should think he would not be sorry to have an opportunity of showing that his unfettered ability can produce a work which will be a mark, not of the past, but for the future, of English architecture.

J. B. COLLINSON,
Colonel Royal Engineers.

A New Pagoda has just been completed in Rangoon, amidst great popular rejoicings. The *Rangoon Gazette* says that "the total height of the pagoda and *htee* is shown at 240 cubits and 6 inches, equivalent to about 375 English feet."

PEABODY-SQUARE, BLACKFRIARS-ROAD.

PEABODY-SQUARE, recently erected for the Peabody Trustees from the designs of Mr. H. A. Darbishire, consists of sixteen blocks of buildings, inclosing two quadrangles communicating with each other, and is situated on the site of the old Magdalen Hospital, on the west side of Blackfriars-road, near the Surrey Theatre.

All the blocks are alike in construction and arrangement. They are four stories high, containing ten rooms on each story, and these are distributed in dwellings of one, two, and three rooms, giving a total of 384 dwellings, and 640 rooms.

The living-rooms measure 13 ft. by 11 ft., and the bedrooms average 13 ft. by 9 ft., with a height of 8 ft. 2 in. from floor to ceiling. The former contain the usual cooking range, with boiler, oven, and hot-plate, and are provided with cupboards, shelves, and meat-safes. Some are provided with coal-boxes, others have coal-stores in the adjacent sculleries. There are two sculleries on each floor, containing water-closet, sink, and water supply; also a dust-hopper communicating with dust-cellar in the basement, to which access is obtained by an interior staircase. A bath-room, with enamelled bath and plentiful water supply, is provided on the ground floor of each block.

These buildings differ from the majority of those which the trustees have erected, inasmuch as they have no corridors; the staircases are inclosed, and the washing accommodation is contained in laundries apart from the dwellings. The dimensions of the rooms, also, are rather larger, and their cupboard convenience is increased. The buildings are plainer, and less imposing in appearance, than their predecessors; their cost is materially less, and they are more popular with the tenants. As we said in the account we gave when they were first opened, they are more homelike and agreeable than the other establishments erected by the Trustees.

The laundries consist of two detached buildings, each containing accommodation for twenty washers at one time. The washing-rooms are on the ground-floor, with water-closet, wringing-machines, &c., and the drying-rooms are above. The works were executed by Messrs. William Cubitt & Co.

A portion of the site belonging to the trustees is still unoccupied, but it is proposed to cover it with similar buildings as soon as possible, the demand for the completed dwellings being considerably in excess of the present supply. We give with our view a block plan showing the position of the blocks, and a plan of one of them to a larger scale.

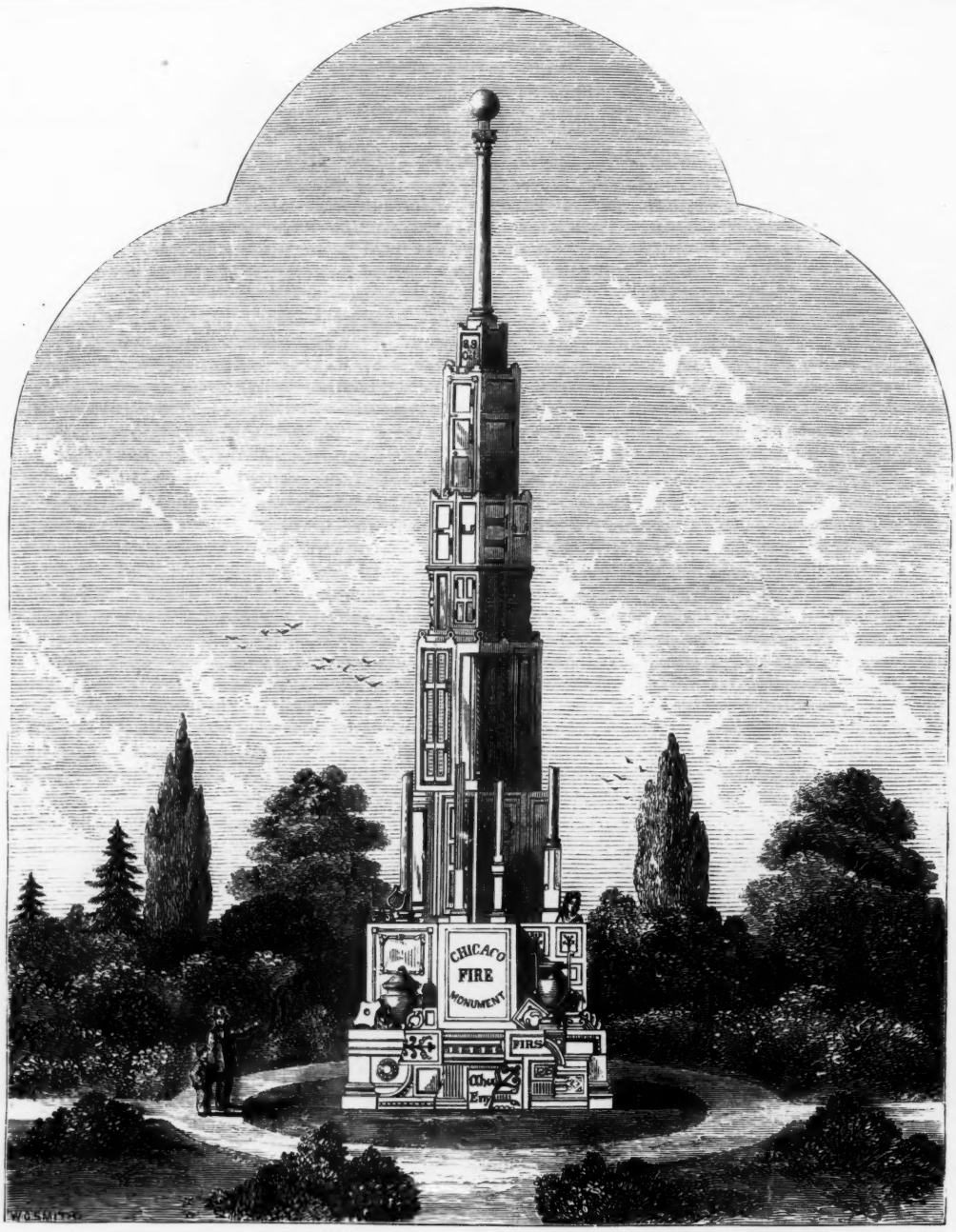
MONUMENT OF THE CHICAGO FIRE.

OUR engraving represents an odd monument about to be set up to record the recent dreadful fire. It is to be erected in Central Park, West Chicago, one of the large city parks, on a site just within the principal entrance, originally designed for a monument.

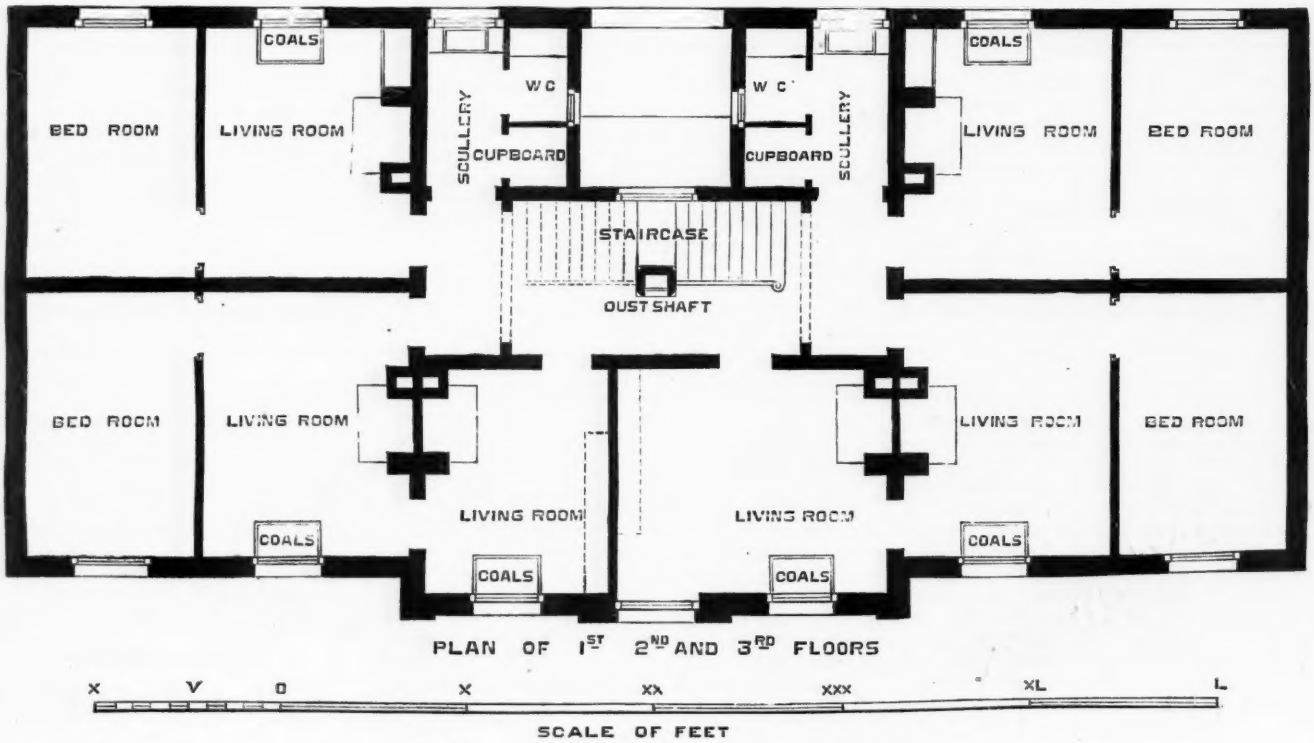
The materials are relics of the late fire that destroyed the entire business portion of the city, together with about one-third of the residences, and consist of iron safes, columns, sculptured stone cornice and ornaments, which have been presented for the purpose, and are now being hauled to the site.

The height of it will depend to some extent upon the amount of material collected; it will exceed 100 ft. The work of construction will commence as soon as the weather will permit. The architect is Mr. W. L. B. Jenney, of Chicago.

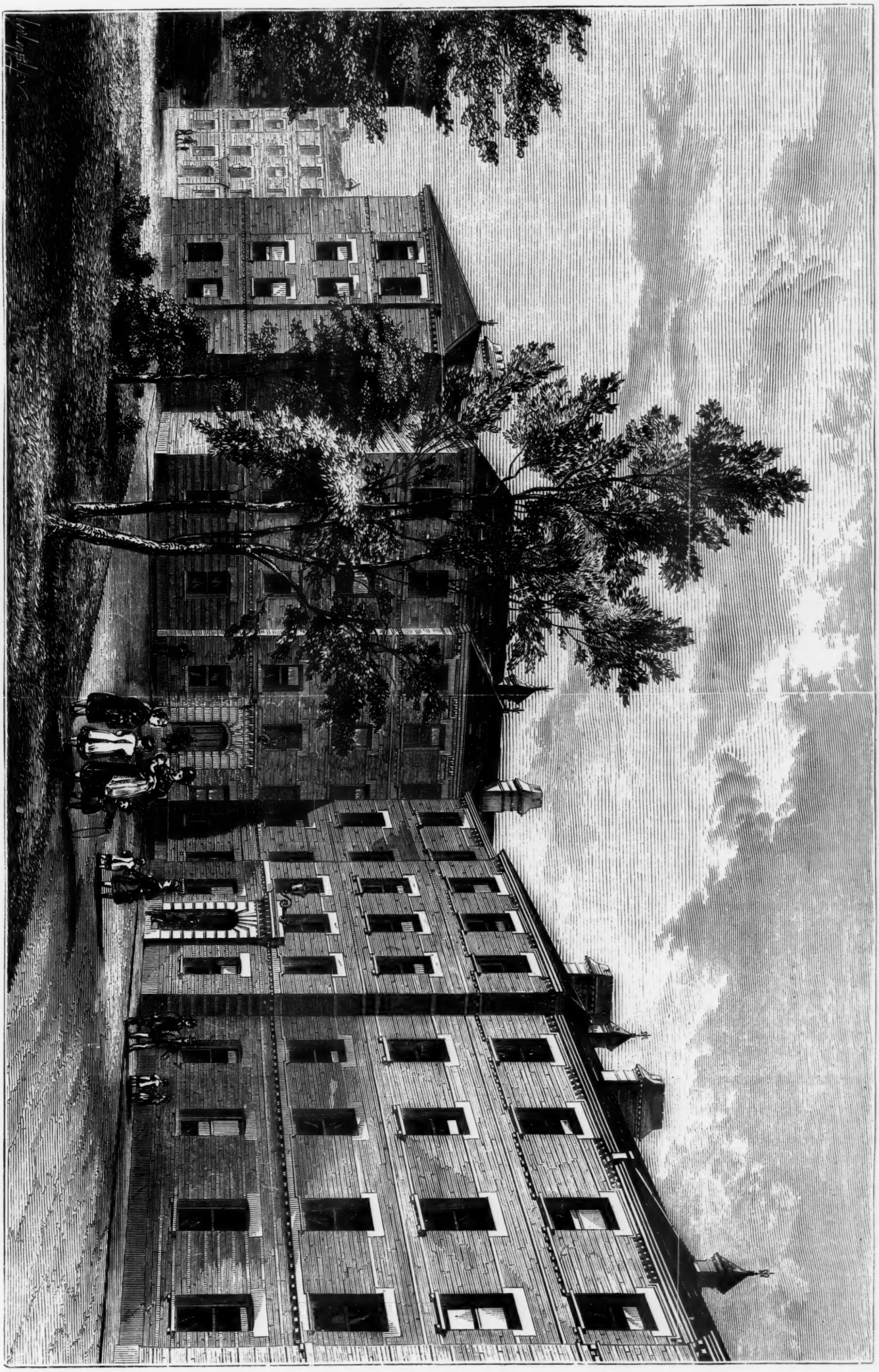
We can scarcely anticipate a satisfactory result: the monument will suggest the advertisement of an enterprising safe-maker. Chubb, Milner, or any other of our manufacturers in this line would doubtless supply good specimens for the purpose free.



FIRE MONUMENT, CENTRAL PARK, WEST CHICAGO.——MR. W. L. B. JENNEY, ARCHITECT.



PEABODY SQUARE, BLACKFRIARS ROAD.



PEABODY SQUARE, BLACKFRIARS ROAD.—MR. HENRY A. DARBISHIRE, ARCHITECT.

DEADLY WAKES AND WASTEFUL FUNERALS.

AN edict has at last gone forth against wakes and funerals, both in Ireland and England. Cardinal Cullen has felt it necessary, not only to condemn the demoralising practice of nursing the dead, but to threaten a sort of religious penalty that is likely to have some good effect with the members of his flock. It is many years now since the *Builder* first drew public attention to the pernicious and criminal custom of "waking the dead, and so killing the living," carried on in the homes of the London Irish.

An Irish Roman Catholic priest located at Camberwell has just made an announcement that the practice of "waking bodies is disgraceful." He cites what must be considered a terrible picture, that forty persons had sat in one room with the corpse, and that during the night fourteen gallons of beer were consumed.

To this painful picture might be added a little more colouring without the least exaggeration. Let us imagine that among these forty persons there were at least half of them females, the majority of them marriageable; and that besides the beer there was probably half a gallon of whisky drunk, and a quantity of tobacco smoked. The character of the songs and conversation that usually distinguish such gatherings can be imagined, and the moral degradation and blunted feelings they superinduce. Having ourselves witnessed Irish wakes, not alone in Ireland, but in London, in the wynds and closes of Edinburgh, Glasgow, Newcastle-on-Tyne, Birmingham, Sheffield, Leeds, Liverpool, and various other towns in the kingdom, we can form an estimate of their baneful effects.

We have known cases where the deceased, when living, was only existing from hand to mouth; yet his death and "wake" were the signal of the most wasteful expenditure on the part of his friends and relatives.

Many thousands of the London Irish are members of burial societies, to which husbands and wives pay certain weekly subscriptions, amounting from twopence to perhaps fourpence, and even sixpence a week. In this the conduct of these poor people is most commendable. The sums paid at death average, perhaps, from 50s., for a child, and from 5*l.* to 10*l.* or 12*l.* for an adult (husband or wife). Unfortunately too often this sum that should be economised by the survivor in the providing for the funeral and the grave, while bethinking of the future, is thoughtlessly squandered in nursing the corpse, and feasting the jubilant mourners who come from miles around to drink with all due reverence, "The memory of the dead." Then comes the solemn mockery of the poor man's funeral, or the poor woman's, as the case may be, and more money is wastefully spent. Certain of the East-end undertakers, who specially provide Roman Catholic funerals, have in requisition "a Catholic hearse" for the conveyance of the deceased London Irish, and this custom has become so recognised, that many of the Irish poor would resent as an insult any attempt to convey the remains of their relative in any but the orthodox vehicle.

An Irish funeral of somewhat large dimensions may be seen almost any week in the year at the East-end of London, or in the Borough; but a bonâ-fide Irish funeral *cortége* and procession, with all honours, is becoming a rather rare occurrence anywhere out of the Emerald Isle.

Once the body is consigned to the earth, a few of the mourners may return straight home; but, unfortunately, a very large portion of the men who form the funeral procession will betake themselves to the public-houses in the vicinity, and night and drunkenness envelop the conclusion.

If the dignitaries of the Roman Catholic Church had begun their crusade a quarter of a century ago, how much disease and misery might have been prevented! Imagine, in the case of a man or woman dying, perhaps, of some dangerous disease, the body being waked from Wednesday or Thursday till Sunday afternoon, the coffin, even if there be one, till the last moment unclosed!

The love for "the Sunday funeral" induces the people to nurse their dead for days, to the imminent peril of the health of the entire neighbourhood. We are not exaggerating in any particular. What we state we know.

We are free to admit that there are respectable families who permit wakes in connexion with their deceased relatives from feelings of reverence and the old ties of country and custom. Neither religion, morality, public decency, nor public health can, however, sanction or permit the continuance of such a baneful custom. The practice is bad and reprehensible in all views, whether it take place in homes above the reach of want, or in the homes of the working poor. If people could only be brought to realise the picture usually presented at these "wakes," in all their baleful, senseless folly and wickedness, their extinction might be looked for. There are probably very few writers or reformers of abuses who in reality know aught from personal observation of these doings. Many here in London, who view them in the mind's eye through snatches of information from time to time in the newspapers, laugh at them, from their comical aspect. There are worse evils attending and arising from the practice of "wakes" than the drinking of beer and whisky,—worse evils even than the infection transmitted from the dead to the living. The corpse may be buried, and the drunkard resume his daily labour; but in the home of the dead there may be more than one sad remembrance of virtue undermined, of young womanhood unsexed, and the dolorous sequence in the streets and the river.

Let the clergymen of all creeds side with the law, and let the law be not harshly but firmly enforced. It is sufficient to cope with the evils we have pointed to.

AS TO A NEW STYLE.

THE question of a new style, which has lately been agitated, has closed, as usual, without producing any tangible results.

And thus it will ever be, until it is argued with a clearer conception of what constitutes a style of architecture than the writers of some of the letters I refer to have shown. A careful study of the history of the art will prove that the distinction between varying styles is not to be sought in the arbitrary use of certain "forms," "features," or "details," by one or the other, but that it lies far deeper, and is to be found in the characteristic mental tone of the builders themselves, of which such styles are an accurate reflex.

Let us take the case of the Greeks, a people whose leading characteristics were intense love of absolute perfection, and perfect confidence in their own ability to attain to it; whose emotions were few and kept carefully under control; unimpressionable advocates of philosophical calm, with a rooted distrust of variety. What sort of buildings could be expected of such a race, but just what they actually erected?—all on one simple fundamental plan, with no complicated construction or straining arches to destroy the appearance of self-contained repose which was the Greek ideal, but with all their homologous parts exactly uniform and worked up to as high a pitch of beauty as they were capable of.

It was far otherwise in the Middle Ages; the high emotional tone, the deep reverence of the Mediæval mind required to be impressed with the long-drawn aisles and lofty vaults of the Gothic church. In such a building the round form of arch inherited from the Romans, with its strong lateral thrusts, had no place; where economy of vertical space was not only useless but undesirable, the pointed form, which, in all its various uses, carries the aspiring principle firmly stamped upon it, was much more appropriate, and was no sooner discovered than universally adopted.

The same aspiring tendency carried the roof upwards into lofty gables externally, extended counter-weights into pinnacles, and tower-caps into spires; while a conviction of the unattainability of perfection, and yet of the necessity of pressing forward impatiently on the road to it, caused that roughness, want of finish, and healthy imperfection, which so much distinguish Gothic from Greek work.

Thus, with the exception of window tracery, the result of the accidental invention of coloured glass, we have the main distinctive features of Mediæval architecture; the production not of arbitrary "taste," but of an unalterable psychological law.

Did the limits of a letter allow, I might point out how Oriental indolence produced the flat surfaces and spiritless arches of Eastern architecture; how Egyptian gloom raised the massive piles that crowd that strange land; how the characters of the Chinese, Hindoos, and all other nations may be predicted from their architecture as safely as the habits of an animal from its organisation; how, finally, even the safeguard of literal copying has not prevented this age fixing its stamp faintly on the so-called revivals of other styles. Can we, then, believe that it would fail to fix it with firmness and vigour on an architecture developed anew from its elements? Revivals of old styles can never be a success, unless we reproduce the tone of thought of the age that gave them birth. The clear mind of Pugin saw this; but unfortunately his admiration of Mediæval art was so great that he actually proposed to effect such an impossible reproduction, and in his enthusiasm led the way himself.

By developing an architecture from its elements, I mean that we should begin in theory, as other nations did in practice, from simple squared masses of building material; and bringing to the work a sense of beauty trained by assiduous study of the Creator's noblest works, shape these rough blocks to such forms as shall give not only pleasure, but satisfaction to the faculty so cultivated; and beauty, I believe, is but the expression of an all-pervading, guiding *reason* in form.

We can then add ornament, the representation of the most admired works of nature, to give additional interest to the building; enrichment or patterns to relieve plain surfaces; and colour, whose use needs no comment.

The ancients designed on these principles buildings which are real and true organisms, each part designed especially for its own place, all together forming a harmonious whole. We pick their buildings to pieces, and, considering each part as a fixed quantity under the name of a "detail," or an "ornamental feature," patch them together, like children with a box of bricks, to form structures frequently with as little truth in them as the well-known monster of Horace's imagining.

To predict what the style of this age will be is, perhaps, premature; yet, I think that there can be no doubt that the breadth of view which distinguishes modern thought will tend to spaciousness in the area of buildings. The pointed arch, I think, will be found unsuited to the period, and the round form will be adopted, with a slight ellipticity (the long axis, of course, vertical) to give it that life and vigour wanting to the pure semicircle; and, as the Mediæval architects made the development of painted glass windows one of their chief cares, so the great problem of this age, I believe, will be, or rather has been, propounded by the invention of wrought-iron roofs.

I have already trespassed too much on your space; permit me but to add, that I should not have written a letter controverting, as this does, the opinion of so many eminent architects, had I not first practically proved the possibility of designing buildings, monumental and domestic, in the new style whose cause I am advocating. Although want of leisure has hitherto prevented the working out of complete illustrative drawings, yet if any gentlemen who take an interest in the subject should be willing to lend their assistance, a short time would suffice to lay the scheme before the public in its practical working, as well as in its theoretical bearing.

Let me not be misunderstood. I lay no claim whatever to the "invention of a new style." I am simply anxious to show that the style of the nineteenth century is not a visionary dream; and that its conversion from a potential to an actual existence is neither difficult nor troublesome.

A CAMBRIDGE GRADUATE.

THE SITE FOR THE LAW COURTS.

DEMOLITION OF THE BUILDINGS IN ST. CLEMENT'S DANES.

DURING the present week the owners and occupiers of the houses and other premises in St. Clement's Danes, whose property has been obtained by compulsory purchase for the purposes of the New Law Courts, have commenced preparation for giving up possession of their several tenements preparatory to the work of demolition being proceeded with. Miss Coventry, the proprietress of the "Anchor" dining-room and restaurant, opposite St. Clement's Church, and who has received 2,250*l.* as compensation for her lease and goodwill, closed her premises early in the week, and on Thursday had a sale of her effects preparatory to immediate removal. On Monday next, the 15th instant, the St. Clement's Danes Vestry, who have received 10,000*l.* for

their premises, including the old burial-ground and the almshouses adjoining, will give up possession of the property. Mr. Da Silva, the cigar-dealer and billiard proprietor, who occupies the premises next to the vestry-hall, and who has received 2,100*l.* in compensation, announces that he gives up possession at the end of the following week; and we understand that the Midland Railway Company, who occupy the premises adjoining as one of their parcel-offices, will remove about the same time. The occupiers of the four houses in St. Clement's-lane, leading to the Inn, who have also received notices, as well as the old matrons who occupy the six almshouses belonging to the Vestry, are to give up possession immediately, when the whole of the buildings will at once be taken down, but we learn that the bodies in the old churchyard will first be removed under the faculty granted by the Bishop of London. We understand that the St. Clement's Danes Vestry intend to make a comfortable provision for the inmates of the almhouses who will be turned out of their premises for the purposes of the New Law Courts.

SANITARY MATTERS.

Malton.—Drain fever and drain ventilation are *now* receiving every attention everywhere. The Malton Board of Health have appointed a special committee to inquire into the subject of drain ventilation, the condition of private houses as to drain-connexion and water-closet and soil-pipe ventilation, the covering of ashpits, and general sanitary matters. The inspector has been ordered to visit all houses using water-closets, to inspect drain arrangements, &c., and report.

Nottingham.—In a letter to the *Nottinghamshire Guardian*, Mr. Sidney R. Stevenson, architect and Surveyor, Nottingham, says:—Having been called in to inspect and report upon the condition of the drainage of property in the higher situations of Nottingham, I have been astonished to find so little care taken in the sanitary arrangements of the better class of houses. In one case I found the cold and hot water cisterns (fixed in the bath-room) supplied the kitchen, bath, and lavatory; and from the same cold-water cistern the water-closet was supplied. It is almost superfluous to tell your readers that through the closet-valve in the cistern the noxious gases from the main sewer have the chance to force themselves into all parts of the house, and to impregnate the water with their effluvia. . . . A factory owner, with whom I am well acquainted, states that when he has occasion to blow off steam the inhabitants of the adjacent small houses have frequently told him that the steam from the sewer has found its way through their drains and sink-traps into their houses. If such be the case with the floating steam of an engine boiler, with how much more power must the foul gases of the sewers force their way through the majority of drains and traps? A serious case of typhoid has just come under my own observation from this cause. The residence abuts upon what is considered to be one of the most healthy parts of Nottingham—the Arboretum. The effluvium accumulates in the sewers of the lower parts of the town and rushes to the higher, and by accelerated power the gases force their way through lavatory basins, closet valves, and places little suspected. Surely these facts are worthy the consideration of the Sanitary Committee and their able surveyor, Mr. Tarbotton.

Sheffield.—At a recent meeting of the Local Health Committee applications for the vacant post of chief sanitary inspector were opened. These numbered upwards of a hundred. Though the committee sat upwards of three hours, they found it impossible, having other business to transact, to read the testimonials of the various candidates, and to come to a decision upon them. The meeting was therefore adjourned. The committee were able, however, to come to a decision as to who were the most suitable candidates; and fifteen or sixteen of the best were selected. The list of the selected candidates was as follows:—Mr. Tudor, engineer, Manchester; Mr. Drake, sanitary inspector, Salford; Mr. Wever, civil engineer, Leicester; Mr. Clarke, sanitary inspector, Norwich; Mr. Roome, sanitary inspector, Rawmarsh; Mr. Dobson, sanitary inspector, Glasgow; Mr. Fitzpatrick, sanitary inspector, Liverpool; Mr. Coghlin, chief sanitary inspector, Margate; Mr. Winn, civil engineer; Mr. Maskell, from the office of Mr. M. E. Hadfield, Sheffield; Mr. Lancashire, from the office of the borough surveyor, Sheffield; Mr. Crofts, nuisance inspector, Huddersfield; Mr. Currie, chief sanitary inspector, Newcastle; Mr. Watson, Sheffield; and Mr. Griffith, sanitary inspector, Ashton-under-Lyne. The contest was ultimately between Mr. Roome and Mr. Crofts, and the latter was elected by a majority of one.

Pollution of the River Lea.—A deputation from the Society for Improving the Condition of the Poor, consisting of Mr. Charles Reed, M.P., Messrs. Robert King, Hacon, and Kemp, have attended the Lea Conservancy Board, to present a petition:—

"That the river Lea is the means of wholesome exercise and recreation to many thousands of the inhabitants of Hackney and of the East of London; that the discharge of part of the sewage of the parish of Tottenham into the river Lea, north of Bailey's-lane, makes both the river and its banks offensive to passers-by and dangerous to health, and pollutes the stream for the whole of its course through this parish; that those who live near the river and those who resort to it are exposed to the risk of disease by its defilement, and are deprived of the proper use and enjoyment of the river."

The petitioners therefore request that steps may be taken for preventing the sewage of Tottenham from being discharged into the river. The chairman received the petition, and stated that the Board was taking effective measures to suppress the evils complained of; but there were restrictions in their Act which retarded their proceedings; but he assured the deputation that the nuisance of the Tottenham sewage would soon be abated, as the Board had now under consideration a plan for the interception of the drainage of that populous place.

THE NEW "SOCIAL MOVEMENT."

MR. SCOTT RUSSELL has addressed a letter to the lords, gentlemen, and fellow-workmen who constituted his Representative Council of Working Men and Council of Legislators, containing a programme of the measures which he thinks are needful to turn the celebrated seven resolutions into legislative acts. He hopes it will soon become his duty "to lay before the Council of Legislators the communications they are awaiting;" but meanwhile, as the premature disclosure of their plans has for a while arrested the progress of the movement, he wishes to utilize the time by obtaining their individual co-operation, before the date of the meeting of Parliament.

He thinks that it should be stated in the preamble of these measures, that in some countries lands round towns are held by their inhabitants for the common good; that in England the Legislature has taken from the people millions of acres of common land, which were the entailed estate of the people; that though human beings have not been recognized as objects of value, skilled men and their families are national wealth, and the rearing and cultivating of healthy families is an object of the highest public utility. Parliament should, therefore, grant powers to villages and towns to purchase outlying lands just as railway companies do. The quantity to be—

"one acre for one-tenth part of the inhabitants in towns exceeding 20,000; half that quantity per head where the town exceeds 100,000; and in towns and villages under 10,000 it may reach one acre to five of the population. These lands are to be used as follows:—One half shall be appropriated to detached cottages in gardens, the other half shall be held as common land, left free in the middle of the cottage ground, within which there may be enclosed school-houses in their play-grounds and gardens, recreation-grounds for the people, a town-hall, market-houses, and places of instruction."

The Corporation to have powers of road-making, purchasing and letting property, building and pulling down and destroying unwholesome buildings and appropriating land for the common good. The revenue for these purposes Mr. Russell would raise from the rent of land. The agricultural value of land is fifty shillings an acre; a town of 10,000 inhabitants would have to pay 25,000*l.* a year for its land. There would settled on that land 1,000 families in cottage gardens, who would pay 1,000 rentals of fifty shillings each; and, considering that the common lands have been taken from the poor for the benefit of the rich, they must be restored by means of a property-tax, which would, of course, fall on the rich. A third source of revenue would be the rental of the cottages. A rental of 105 shillings a year will not only pay for building a cottage, but will repay the capital in a moderate time; and thus "a rental of 155 shillings a year will give a family home, health, and garden ground." But for these purposes capital will be wanted, not less than 150,000,000*l.* sterling—the price of a war.

"The rentals of these cottages will defray the interest and repayment of this 150,000,000*l.*, and the land-tax will enable the artificial value of the land to be converted into Consols. The increased value of a million skilled men will be worth to the country more than 50,000,000*l.* a year in the enhanced value of the productions of their industry. Then there are roads, drainage, gas, police, markets, schools, and public buildings, and all the other elements of town organisation; these must be provided for by special revenues. The organisation of these communities is to be municipal.

"The public service is to be organised for the common good, on the fashion of the Post-office. An organised postal delivery, on the Swiss model of parcels and goods of all kinds, 'is of the highest importance to the well-being of the common people;' 'and the same is true of savings-banks, life and fire insurance, annuities, currency, and money.'

"In the middle of every group of homesteads the State will have to plant out a group of skilled teachers,—men skilled in head and hand, men specially skilled in the trades and occupations of the district."

In conclusion, Mr. Scott Russell begs that these proposals may be taken into consideration, "with a view of correcting and maturing them into fitness for laws." Whether they can be brought into one enactment or many, they all, he contends, hold together, and in his view any one will probably fail apart from all the rest. He therefore urges that these questions may be considered, "not as isolated measures tending to better only a part of an ill-conditioned human being, but as the elements of a condition of life tending to better and elevate the physical, moral, and intellectual well-being of the whole man."

BEHAVIOUR OF SAFES AND VAULTS IN FIRE.

THE experience of the late fire in Chicago affords much information regarding the relative merits of safes and vaults for the preservation of papers or other valuables. The work of digging out safes from the ruins, which was begun as soon as the heat of the smouldering piles would admit, resulted in proving the fact that safes, however well constructed, would not, under all circumstances, preserve their contents unharmed. Those placed in wooden buildings, as a rule, held papers and books in good condition; the materials of which such buildings were composed burned so quickly and entirely, leaving nothing remaining to smoulder and retain the fire, that safes did not become heated through. But in buildings of brick and stone the result was more unfortunate. The safes fell among masses of material which burned steadily, and gave forth intense heat for days after the first fire, and thwarted any attempts made at removal. The safes lying in the midst of such heaps of fire became intensely heated throughout, and when efforts to remove them were finally successful, their contents were found, in many cases, to be ruined. Books, papers, and bank-notes still retained their form, but had changed to black in colour, and, upon the slightest touch, crumbled into powder. In almost an exact proportion to the length of time they had been forced to remain in the burning ruins, safes were found to have their contents uninjured, or partially or totally destroyed. It is evident that, while a well-constructed safe will hold uninjured books and papers; yet, remaining in the fire for a long period, no one yet made will fulfil its purpose. With vaults the result proved entirely different. In nearly every instance well-built vaults held their contents intact. Bricks and mortar proved excellent non-conductors of heat, and upon the opening of large vaults which stood for some days in the midst of fire, their interiors were found scarcely warm, according to our authority, the *American Builder*.

These discoveries will doubtless have the effect of introducing more largely the construction of vaults in buildings devoted to business uses, and the disasters resulting from their faulty construction, of which the one in the Custom House furnished a notable example, will perhaps induce more care in building. A vault badly built is worse than a poor safe, for the latter does afford a degree of protection to what is within it, while the former gives no protection at all.

It must not be inferred from the statements made above that safes buried in the ruins of the late fire did not accomplish a great degree of good. Property of immense value was preserved through their agency, and where not exposed to heat of the most intense character, and for a long time, the safes generally stood the test well, and reflected credit on the makers, and must continue to be used, even where faults exist; for, to

secure perfect safety, valuables must be placed in a safe surrounded by a vault; and, for ordinary fires, safes have proved themselves equal to all requirements. But for such occasions as the late fire only vaults can afford the perfect security needed.

THE TRADES MOVEMENT.

London.—It is understood that a conference of the master builders of the metropolis is about to be held, to decide upon what steps should be taken with reference to the request of the Stonemasons' Society that the employers should adopt a uniform nine-hours system for the whole year, instead of confining the nine hours to the winter months, and terminating that rule on the 14th of February. Added to this, the demand on the part of the society for an advance of one penny an hour on the present rate of wages, on and after the 1st of July next, has caused a considerable amount of anxiety amongst the leading men in the trade—in fact, amongst the master builders generally,—as the penny an hour would add something like 10 per cent. to the present amout paid the men. Not the least important question to be considered by the conference is stated to be —in connexion with taking contracts—that of the large prospective increase in the cost of building operations, should the nine hours and advanced wages hereafter apply to other operatives in the building trade besides the stonemasons.——The East of London has been placarded with notices, offering labourers employment at Carlisle at the wage of 3s. 6d., with the additional inducements of cheap lodgings, daily payments, and railway fares paid.

Lock-out at Messrs. Pontifex & Wood's.—The General Council of the Amalgamated Society of Engineers have considered and discussed a dispute which has arisen between Messrs. Pontifex & Wood, the extensive engineers of Shoe-lane, and their workmen; and to decide what should be the action of the men with reference to proposals of their employers, by whom they have been locked out. Mr. William Allan, the general secretary of the society, stated that he had an interview with the firm on the previous day, and he now submitted to the council the proposals of Messrs. Pontifex & Wood. Mr. Pontifex said in effect that the nine-hours system had been conceded to the workmen, a rate for overtime having also been agreed upon. What the firm wanted was that the men should leave off work for tea at half-past four, that they should take half an hour for tea, that they should resume work at five, and leave off finally at six. For the overtime worked the firm were quite willing to pay their men at the rate of "time and a quarter." After discussing the question in various aspects, the council unanimously resolved that the proposal of Messrs. Pontifex & Wood could not be accepted by the men, as it was at variance with the principle of the nine hours.

Trades-union Congress at Nottingham.—The fourth annual congress of the trades' societies and trades' councils of the United Kingdom commenced at Nottingham on Monday. There was a large attendance of delegates. Mr. George Potter, of London, was elected chairman until the credentials of the delegates were received. He delivered a short address, in which he congratulated the delegates upon the prosperous state of the trades generally, and trusted that good results would emanate from the proceedings of the congress. The scrutineers' report showed that eight trades' councils and forty-three district organisations were represented at the congress. Seventy delegates had been accredited, representing constituencies amounting in the aggregate to 255,712. Mr. Leatherhead (Nottingham) was elected president for the ensuing year. The mayor of Nottingham entertained the delegates at a banquet in the Exchange-hall.

The Potteries.—The members of the various branches of the Operative Bricklayers' Society, in the Potteries, Newcastle-under-Lyne and district, have given notice to the master builders that they require an alteration in the "working rules of the Potteries," passed some short time ago by Mr. Davis, the late Stipendiary. In the first place, they ask that the time for leaving work shall be half-past five o'clock, instead of six, during the summer months, that they may be placed in the same position in that respect as the other branches of the building trades. In the second place, they ask for an advance of wages one farthing per hour.

Arbitration in Trade Disputes.—A "Bill to extend the Application of the Act to consolidate and amend the Laws relative to the Arbitration of Disputes between Masters and Workmen," which is to be introduced into Parliament early in the coming session, has been printed. It bears the names of Mr. Mundella, Mr. T. Brassey, Mr. Samuel Morley, Mr. W. H. Smith, and Mr. Thomas Hughes. The Bill is not a long one, having only eleven sections, with an appendix showing what portions of the Act of 5 Geo. IV., c. 96, are to be incorporated in the new law. The Bill provides that its provisions shall apply to all Boards formed for the purpose of settling disputes of any kind between masters and workmen in any trade; that every master who agrees to be bound by the decision of any Board shall keep displayed a copy of these rules, and give a copy to each of his workmen, who, receiving it, shall also be bound by the rules; that the attendance of persons and the production of documents shall be secured by proper means and under certain penalties; that the decisions of the Boards shall be in writing, and be enforced; that no member of any Board, or person bound by one, shall be liable to any penalty under any Act relating to breach of contract between masters and servants, of which such Board might under its rule take cognisance; that the acceptance of this Act by Boards shall be voluntary, and this acceptance may be entire or partial; and that the provisions of the Act shall not apply to Boards of conciliation only. There is to be, by the provisions of existing law, incorporated in the Bill, power to summon witnesses, and compel them to give evidence on pain of imprisonment; power for a married woman to lodge a complaint in the name of her husband, and for children in the name of parents and guardians; and power to enforce awards by distress or imprisonment.

THE THREATENED STRIKE OF MASONS.

SIR,—The threatened strike of the "Operative Stone-Masons" on 14th February, as announced by their secretary in your last issue, is one which will, if persisted in, lead in all probability to a repetition of the great "Builders' Strike" of 1859, with all its disastrous consequences. But, as one who suffered considerable loss on that occasion, I would earnestly beg the "Operative Masons" to consider what they are about, and whether they have any justification for plunging the whole building trade into confusion and loss. A strike of masons must necessarily involve a lock-out of other trades. It was only in October last that the "Operative Masons" sent to the Builders' Society a memorandum of their wishes, which was acceded to by the majority of London builders. This memorandum was to the effect that the hours of labour should be 50½ hours for the 14 winter weeks of the year, and 56½ hours for the other 38 weeks, or on an average something over 54, but less than 55 hours per week for the entire year.

But, as frost and bad weather are certain to interfere more or less with masonry, it follows that masons do not, under present regulations, work on an average 54 hours per week, which hours have been decided on by the whole engineering trade as a proper carrying out of the nine-hours system.

All my brother master builders to whom I have spoken agree that there is no reason for now altering the hours of masons' labour from those which they themselves put forth three months ago.

I hope sincerely that common sense will induce the "Operative Masons" to withdraw their notice. A MASTER BUILDER.

BIRMINGHAM, PAST AND FUTURE.

WHAT is going on in Birmingham, we fear, applies to many other towns. It is a subject often recurred to in the *Builder*. The editor of the *Birmingham Morning News*, in a leading article on this subject, says:—

The condition of the old part of almost any old town has been described and lamented over times without number. We shudder as we pass the street end of the crowded court, and we apologise for the vices of its inhabitants, by asking what better can be expected from those whose very conditions of life shut out from them the possibility of knowing what pure air or bright light is. We regret the existence of these dens of infamy.

But how many people are there in Birmingham who know at this moment in what manner the future dwellings of the poorer classes are being provided? Nothing is really known; nothing is plainly said. No official acquaints the Town Council, month by month, of what has been done to the permanent injury of the town. No one gets up in his place, or, indeed, has a place in which to get up and say,—"Since our last meeting, twenty, or forty, or sixty more so-called houses have been begun or finished, in which decent life is impossible, or in which it is possible to live with either health or happiness." And yet surely this is a matter whose importance cannot be exaggerated, and of which it is an absolute necessity that we have definite and exact information. For the fact is that, almost without exception, these additions to our town are in the hands of speculators whose worldly means are certainly not equal to their energy or activity. The buildings of the poor are mostly built by the poor, with money borrowed from the rich. The system of leaseholds is almost universal, and, comparatively speaking, freehold land is not to be obtained. If a piece of freehold land comes into the market, it is turned into leasehold without loss of time. The consequence is, that the constantly increasing endeavour is to place the largest number of tenements upon the smallest possible plot of land. By this means the ground-rent of each separate house is kept down to a minimum; and the success of the speculation is rendered more certain. The next object is to build the houses themselves with the smallest amount of material that can possibly be used. The walls are thin, the timbers are few and weak, the roofs are light, the internal fittings are of the cheapest and commonest description. Every method is studied by which space may be saved, and materials economised. One of the commonest, and, at the same time, one of the worst expedients, is to build rows of cottages back to back.

BUDA PEST COMPETITION.

THIS competition, in which the engineers and architects of all nations were invited to send in designs for the improvements of the capital of Hungary, was concluded in December last, and the only prize awarded to foreigners was gained by Mr. F. A. Klein, C.E., of Cannon-street, City, and Mr. Alexander Fraser, C.E., of Brook-street, Grosvenor-square, for superiority in the arrangement of the communications between different parts of the city, parks, ornamental works, waterworks, sewers, and docks.

CEMENTING RAINWATER TANKS.

MR. W. B. WILKINSON, in the *Builder* of the 2nd of December last (p. 944), states that the proper proportion for coatings of cement or brick to tanks, to make them impervious is, in his experience, 5 of cement to 1 of sand,—at least, so I understand his letter. This, however, differs so considerably from what is frequently practised and recommended, that it would be of much service if that gentleman would kindly write something further as to this matter. "Rendered with fine cement ¾ in. thick" is, I believe a fairly frequent description in architects' specifications, and, I presume, is also a description of the work executed under them. Some books of instructions could also be referred to where pure cement is either recommended or described as in ordinary use for this purpose. Intelligent builders are sometimes known to argue that a mixture with the best Portland cement of an equal quantity of the very sharpest and cleanest road-drift (say, from a flint-mended road) will add greatly to its success as a rendering coat, stating, as far as they become intelligible, that pure cement, from its expansive habits, ceases to adhere to the surface in parts, and stands out in bulges, in which cracks are afterwards formed, or pieces fall off; others, again, are found believing in something like this 1 and 1 proportion, alleging that the addition of the sand secures a slower setting of the coat, and with that a more equal contraction of the mass; that cracks are produced by the forcible separation of adjacent areas at a certain stage of the process of setting when the material is not thus prepared.

The proportions used by speculating builders in the neighbourhood of London for the cement flats which they love to put over the "wing buildings" of the stereotyped eight-roomed house in rows, are stated frequently as one of cement to two of sand. It is true that they rarely leave a thoroughly water-tight roof behind

them; but that may perhaps be attributed rather to the constructive habits of these builders than to the composition of their cement. This necessarily also is not a good guide for tanks; for although the flat has to resist rain falling with some force, it has usually a good fall, and gets rid of it quickly; whereas a rain-water tank holds a most ingenious and indefatigable prisoner, always searching to improve the least possible chance of escape.

An underground brick tank in use is not a very accessible place for conducting experiments; this perhaps is some excuse for a want of consentient judgment, and for a request for some carefully ascertained facts from those who have them in their possession. STAGNUM.

CONFERENCE COMMITTEE ON PUBLIC COMPETITIONS.

SIR,—Grant me a corner in your valuable journal to acknowledge, with thanks on the part of the committee, the receipt of communications on the above subject from the following gentlemen:—E. Ashworth, H. J. Austin, A. W. Blomfield, J. Boult, R. K. Blessley, W. E. Brown, S. C. Capes, W. Chick, T. C. Clarke, J. A. Cory, J. Cunningham, H. A. Darbishire, A. D. Dawnay, J. S. Dodd, G. A. Dunnage, Edward & Robertson, F. W. Fiddian, E. W. Godwin, A. S. Goodridge, W. J. Green, E. Gregg, R. Griffiths, G. H. Guillaume, F. R. Haswell, J. Hayward, C. Henman, J. Hicks, G. M. Hills, J. H. Hirst, J. Honeyman, J. W. Hugall, T. C. Hyne, H. Jarvis, jun., G. F. Jones, C. Lynam, W. H. Lynn, J. R. Mathews, F. R. Meeson, J. Milne, J. Morris, E. Nash, R. Owens, W. Papworth, R. Plumbe, T. S. Pope, R. L. Roumieu, E. C. Robins, J. Ruskin, J. P. Seddon, P. G. Smith, L. Solomon, T. C. Sorby, H. H. Statham, N. E. Stevens, G. E. Street, T. J. Street, E. Taylor, T. M. Taylor, J. Thomson, J. J. Thomson, A. H. Vale, Wadmore & Baker, D. Walker, F. Wallen, J. E. Watson, T. H. Watson, W. H. Weightman, W. J. Willcox, and C. G. Wray; besides two anonymous correspondents, who will oblige by sending their names.

ALFRED STRONG,
Hon. Sec. Conference Committee on Public Competitions.

CUTTING OAK TIMBER.

SIR,—I propose to panel a dining-room in a house in the country, and to cut down enough of my own oak timber to do it.

Will any one tell me what sized timber I should cut?—whether it is advisable to cut it in winter or summer, bearing in mind that if cut in winter all the bark is lost? Also, what sizes it should be cut into, and when?—that is, how long should it lie on the ground uncut; when should it be cut up; and, when sawn up and laid up to weather, what are the proper sizes for it to be sawn into as boards? What are the best lengths, widths, and thicknesses that the boards should be cut down into so as not to warp too much when finally cut into panels.

J. R. H.

EXHIBITION OF OLD MASTERS.

SIR,—Would you allow me to suggest to the directors of the Royal Academy that at the last week of this exhibition the time of closing should be extended to ten or eleven o'clock in the evening, and the price reduced to 6d.? The same plan is carried out at their annual exhibition. By so doing they would confer a boon on hundreds of people who have no other opportunities of seeing these grand old masters, and cannot lose half a day to do so.

J. R. GOUGH.

VENTILATION OF SEWERS.

AT a recent meeting of the local Board of West Derby, Liverpool, the following minute of Mr. Robert Rawlinson, C.B., on sewer ventilation, was received:—

"By a return recently made relative to the sewers in West Derby, it appears that about eleven miles of public sewers have been constructed, and that on these sewers there are seventy-five ventilating-shafts. It is considered necessary for safety to the public health to ventilate public sewers at intervals not further apart than 100 yards, or eighteen ventilating manholes and grates on each mile of main sewer. This rule requires that there should be on the eleven miles of West Derby main sewers 198 ventilating shafts, or 123 additional to those now in use. Rain-water spouts may serve to ventilate house-drains; but these should not be reckoned in reductions of main sewer ventilation. With means for sewer ventilation as indicated, the air in the sewers will be comparatively pure. There cannot be concentration or stagnation at any part of the system, and it is in concentration and stagnation that danger to health arises. With profuse ventilation there will not be perceptible smell at the ventilation-grates at any one point, as the dilution and dispersion of sewer gas will be unceasing. Foul smells and dangerous escapes of sewer gas only take place from sewers inadequately ventilated. The West Derby local Board has more fully ventilated the sewers of the district than many other local Boards; but, to be safe, the additional number, as now recommended, should be constructed."

The communication has been referred to the Main Sewerage Committee.

BUILDING OVER A SEWER.

AT the Hammersmith Police Court, Mr. Jonas Turner was summoned, before Mr. Ingham, by the Kensington Vestry, for erecting a party-wall over the crown of a sewer in the Brompton-road without their consent.

Mr. Harding, the clerk of the vestry, attended in support of the summons, and Mr. Clayton defended.

It appeared that in the construction of the Metropolitan District Railway through Brompton a sewer was diverted, and another built by the side of the tunnel, unknown to the Vestry. It was the main sewer for the drainage of Walton-street, which was in the parish of Chelsea. As the sewer was laid in the parish of Kensington, it was vested in the authority of the Vestry, under the Local Management Act. The existence of that sewer was brought under the notice of Mr. Broadbridge, the parish surveyor of Kensington, for the first time in August last, when the defendant's builders deposited a plan for draining three houses into it. The defendant had bought the land through which the sewer passed from the railway company, and had built three houses upon it. The wall in question had been erected over the sewer.

Mr. Claydon said the defendant purchased the right which the company possessed in the land, and he supposed that he could build his houses upon it.

Mr. Ingham fined the defendant 20s. and 2s. costs.

Books Received.

A Group of Englishmen (1795 *to* 1815). *Being Records of the Younger Wedgwoods and their Friends; embracing the History of the Discovery of Photography and a Fac-simile of the First Photograph.* By ELIZA METEYARD. London: Longmans, Green, & Co.

MISS METEYARD conceives that she has now traced the proofs which establish the fact that Thomas Wedgwood, the youngest son of the celebrated Josiah Wedgwood, and the only man of great ability amongst his sons, though an invalid for years, and unable to do much to show his ability to the world, was, nevertheless, the original discoverer of the photographic art.

"This fact," she says, "I have now, I think, set beyond all question. I have traced the link which connected the Frenchman Dominique Daguerre with the elder Wedgwood, and so onward, as far as my materials permitted, till we end with the testimony of Sir Humphry Davy and James Watt, the great engineer. If the letter descriptive of the processes of the 'silver pictures,' written in 1799, by Josiah Wedgwood,—the second to Watt,—should yet be found, every doubt as to the originator of this art must vanish; but the family of Thomas Wedgwood knew the discovery was his. We have the living testimony of their descendants to that effect; and the admirable fac-simile of the earliest known heliotype, or 'sun picture,' given in these pages will add strength to that testimony. Mr. Mayer, whose property it is, derived it from an undoubted source; and many of these heliotypes were, it is said, scattered at one time about the Potteries. Mr. H. Adlard, the eminent steel-engraver, has, through the labour of three distinct processes, admirably rendered the original heliotype; and Mr. Mayer, an authority in these matters, thinks that it was the sun's copy of an etching by Teniers, or one of his school."

It appears that so early as 1790 Thomas Wedgwood had a correspondence with Priestley as to researches on light, in which Wedgwood was engaged; and Priestley's letters are quoted to that effect. "I like very much the plan of experiments you mention," said Priestley, in one of them, "as they will very probably throw some new light on a very important subject, about which we as yet know very little: indeed, light and heat are little known, and yet I think they are as open to investigation as air." And, again, in the same year, Priestley says, "I do not know that any experiments have been made on the curious and important subjects you mention, and I have little doubt but your labours in so new a field will be crowned with considerable success. All that is known of the kind is the general aptitude of the more refrangible rays to be reflected in such media as water and the atmosphere." "There is nothing," added Priestley in a further letter, "more within the field of random speculation than light and heat; their connexion is evident, but which is the element of the other is unknown."

The immediate result of these experiments was the appearance of two papers on the "Production of Light from Different Bodies," in the volume of "Philosophical Transactions" for the year 1792. They are, as literary productions, very immature.

About 1802, the subject of the "silver pictures," so far as the name of Thomas Wedgwood is concerned, finally reappears. From about the year 1793-4, when his health gave way, he seems never to have repeated his experiments on any truly scientific scale; but his camera and other instruments remained at Etruria; and these, when seen by visitors, occasionally brought the subject under discussion. Mr. Chisholm and Mr. Josiah Wedgwood—who had been often present during these experiments—could give every detail; and thus when James Watt visited Etruria in 1799, on business relative to a hand-mill he and Boulton were supplying to the firm, the subject of Thomas Wedgwood's extraordinary discovery seems to have been discussed; and a few days later, Watt received a letter (probably a promised one) from Josiah Wedgwood, in which were given the details necessary to experiment. To this Watt replied,—"Dear Sir, I thank you for your directions for the silver pictures, on which, when at home, I shall try some experiments. I was thinking on your mill after I left you, and fear the motion of the spindle is too slow," &c.

"Now," says Miss Meteyard, "if the coloured pictures found in recent years at Soho, and the two 'heliotypes' still existing, and known to be the result of a most original discovery made by Thomas Wedgwood in 1791, were one and the same, would Mr. Wedgwood have given this detail of process, or Watt acknowledged its receipt? The business of producing cheap pictures by colour-washing had been carried on at Soho since 1772-3, and would not Watt have applied to Boulton or Egginton? or, indeed, would it have been necessary, when five minutes in the workshops close at hand would have supplied him with every process used in the application of colour to paper, pasteboard, wood, and metal? Moreover, the Soho pictures and the Wedgwood heliotypes, when seen side by side, are so utterly and wholly dissimilar as to present not a vestige of affinity. The same methods could not possibly have been used in their production. In the Soho pictures we see clearly a faded water-colour, generally lilac, shaded by faint black, laid on by a mechanical, though free, process, akin to stencilling; whereas, the two heliotypes still in existence show strongly the results of a metallic solution made active by some instantaneous process. The hues are those of tarnished silver, faint through time and an imperfect method of manipulation.

After his processes were perfected in 1772-3, Egginton produced these coloured copies of pictures by the score. They were usually sold in glazed and oval frames of black or gilt, and are still to be seen in the remote chambers of old houses. They generally represent subjects taken from Angelica Kauffmann, Benjamin West, Zoffany, Reynolds, and other fashionable painters of the time, this water-colour process being found more suitable to portraiture and figures than landscapes. But after the advent of Boydell and the fine engravers he employed, such mechanically-produced pictures fell into disrepute, and Boulton and Egginton were too commercially wise to continue the manufacture of unsaleable articles. The processes were discontinued, or turned to other accounts, the stock sold cheaply off, and such remnant as remained being stored away in the chambers and closets of a great manufactory, only came to light when the generation of workmen who had assisted in their production had died out."

Miss Meteyard's arguments, which, by the way, she seems to have rather weakened than strengthened, and rather unnecessarily, by a good many repetitions of "it may be," are finally clenched by the grand fact, that the paper published in the June (1802?) number of the "Journals of the Royal Institution," was headed "An Account of the Method of Copying Paintings upon Glass, *and of making Profiles by the Agency of Light upon the Nitrate of Silver.* Invented by Thomas Wedgwood, esq.; with Observations by H. Davy."

"Here," says Miss Meteyard, triumphantly, "in the plainest and briefest words, we have the fact of the invention, and the name of the inventor publicly stated by one who was not merely a friend, but a man of the highest moral character and scientific attainments. Egginton and Daguerre are as remote from these facts as though they had never existed. Had they been false, some other man would have claimed the discovery; or had it been practised elsewhere, the scientific and artistic rivalries of the day were sufficiently keen to have led at once to denial and adverse claims."

Of the processes employed or the results obtained from the heliotype experiments at the Royal Institution, no account exists. Of the earliest heliotypes, those taken at Etruria, 1791–3, two are still extant. One, a breakfast-table scene, is to be found engraved in the "Life of Wedgwood;" the second, and most valuable, is given by Miss Meteyard in her new volume. Of this she says,—

"It is clearly a heliotype, or, as we should now say, a photographic copy, of an ordinary book-engraving, for the cross-hatching of the graver's tool is distinctly visible. It was, probably, hastily torn from some book of travels lying on the table, for the purpose of fixing in the camera, or behind the glass through which the rays of the sun were to pass. The original of this heliotype would just fit into an octavo volume, and appears to represent a Savoyard piper in the costume of his country. Finding some experiment succeeding, he may have torn a print from the nearest book at hand, and thus immortalised, by a new art, what in itself was intrinsically worthless. The authenticity of this heliotype is undoubted, and, as the earliest known specimen of a most original and beautiful discovery, is considered, by those most competent to judge, to be of great value."

The volume under notice is an interesting one, more especially as regards such friends of the family of the Wedgwoods as Coleridge, Godwin, Wordsworth, and others. Thomas Wedgwood was a benefactor to all of those named. He settled an annuity of 150*l.* on Coleridge; and not only were the costs of Coleridge's visit to Germany paid by him, but those of Wordsworth also,—a newly-discovered fact,—as appears from business documents, in which the exact sums sent to both are given.

The way in which a host of the documents on which much of both of Miss Meteyard's volumes on the Wedgwoods has been based were saved from destruction by "the right man in the right place" is wonderful. Mr. Mayer, of Liverpool, a well-known patron of art, took shelter, on one accidental occasion, during a shower, in a small scrap-shop, in the outskirts of Birmingham, while on his way to the Continent; and there he saw a number of old ledgers, but, on carelessly opening up the boards, he found them empty; sufficient remained, however, to show him that they were business ledgers of the Wedgwood establishment at Etruria. On expressing his surprise, the shop-keeper told him they had been very useful for wrapping bacon and butter in, and that he had lots more, but he was afraid they were of much less value, as they were not big books, but small bundles. "Let me see them," said Mr. Mayer; and he was conducted up a ladder, with many apologies, and into a dirty loft, where, literally, hundredweights lay, and the first paper he picked out was an inventory of goods taken by Flaxman to Rome in 1787. That Mr. Mayer secured the prize at so much a hundredweight need not be told, and he saw them himself sent safely to Liverpool. Miss Meteyard has had the advantage of rummaging at will through all this mass of valuable MSS. She has already made good use of them in both of her published volumes, and seems to contemplate putting them to other purposes equally interesting to the public.

Miscellanea.

The City Guilds and Technical Education.—On Wednesday afternoon a meeting of the masters and wardens of the various City Companies was held at the Mansion-house, under the presidency of the Lord Mayor, to consider the question of technical education, as affecting the guilds of the City. Reporters on presenting themselves were told that their attendance was not desired, as the meeting was purely a preliminary one, and confined to the masters and wardens of the companies, together with the various clerks. Several members of the livery committee are anxious that the various halls of the companies should be utilised, by having exhibitions in each relating to their various crafts; but the new idea advocated by the masters and wardens is, that an aggregate exhibition shall take place at the Crystal Palace periodically. We are informed that the only business of a practical nature transacted was the passing a resolution to form a preliminary committee, to consist of a member from each company, and to be elected by their respective companies.

Engineer Institute, Chatham.—The Chatham correspondent of the *Morning Post* says the works in connexion with the new Royal Engineer Institute, at the School of Military Engineering, are likely to be pushed on in earnest, Mr. Sollitt, the contractor, being now in possession of the site. The building is in the Italian style of architecture, with a spacious entrance situated in the centre of the principal front, over which are Corinthian columns, in Portland stone, supporting a cornice, which is surmounted by an open balustrade running the whole length of the building. The lower portion will be built with white bricks, whilst the upper part will be built of buff bricks. On the ground-floor there is to be a vestibule and hall, with lecture-theatre immediately in the rear, the access to it being in front of the main entrance. On the right are to be the halls of study for construction and military engineering, and on the left the library, which will be a spacious and noble room; and the clerk's and secretary's office, with accommodation for the Royal Engineer Committee, whose labours extend to almost every scientific subject in the art of war. On the first, or upper, floor, are rooms for the testing of materials, survey office, and photograph rooms; whilst on the basement floor there is ample room for printing, lithography, and the chemical laboratory.

The Channel Steam Ferry.—Plans are being made at Elswick of some hydraulic machinery to be used in Mr. John Fowler's scheme of carrying locomotives and railway carriages across the Channel from Dover to Calais. Sir William Armstrong has calculated that the machinery will hoist train and all from the rail into the ferry-boat in the space of 4 min. 37 sec.

Sanitary Condition of Mile-end.—Dr. Matthew Corner, Medical Officer of Health for Mile-end Old Town, has submitted his report on the condition and public health of the district for the year ending March, 1871, to the vestry of that hamlet. He accounts for its late appearance by saying that there was a considerable accession of work, caused by the presence of the small-pox epidemic; and before this had subsided, the rumours of the approach of cholera still further added to this work. If (he continues) the number of births and deaths proportionate to population may be taken,—the former as an indication of material prosperity, and the latter of good health,—it might be presumed that the hamlet maintains its reputation for salubrity. The number of births for the year was 3,724, or about 40·7 to every 1,000 of the present population. The corresponding rate for the whole metropolis was 35 per 1,000 population. The births exceeded the average for the previous five years by 333. The annual death-rate in the hamlet was 21·5 per 1,000 population living; that for the whole metropolis was 24 per 1,000 population. The report of Mr. H. Leshaw, sanitary inspector (which is appended to Dr. Corner's), gives an account of works executed during the years 1870-71, and shows that the improved health of the people of the hamlet is not without its specific cause.

Extraordinary Conduct of a Workman. At the Oldham County Police-court, Thomas Beesby, of Manchester, was charged with doing wilful damage to a rope. The prosecutor was a contractor, named John Falkner, of Manchester. He had contracted to repair the top of a chimney at Boundary Mill, Chadderton. The prisoner was engaged to dress the stones. Some dispute arose, which resulted in another man being engaged in the prisoner's place. A number of men were raising stones, by means of the usual machinery, to the top of the chimney, when the prisoner went to the place and threatened that if they attempted to raise another stone he would cut the rope. He was told that if he did so he would endanger the lives of two men on the scaffold at the top. He left the place, but in a short time returned again with an axe. A stone weighing 5 cwt. was then being raised. The prisoner deliberately struck the rope with the axe and cut it in two. To save themselves from falling from a height of 50 ft., owing to the vibration, the two men at the top had to cling to the edge of the chimney. The prisoner afterwards cut the rope twice. The prosecutor confined the case to a demand for 1s. 6d. damage done to the rope. The prisoner was ordered to pay this amount, with costs, or be imprisoned seven days.

Swimming Baths for South London.—A large building has been erected in the New Kent-road, immediately at the back of the Elephant and Castle Railway Station, containing large swimming-baths, which are also convertible into two spacious halls, adapted for lectures and dramatic and theatrical entertainments. The length of the building is about 250 ft., one-half of which is devoted to a corridor, along which, on either hand, are over thirty private baths. In continuation is the great hall, or principal bath, which is also 125 ft. in length, and which, with two galleries, is capable of holding about 4,000 people. The interior of this hall will have attached to it a stage, measuring 52 ft. by 27 ft., which will be supplied with the mechanical contrivances necessary for producing theatrical entertainments. In addition to the large hall or bath there is a smaller one, which is 52 ft. in length by 17 ft. in breadth, and both will be supplied with all appurtenances suitable to the bather's comfort and convenience.

Land-spring next Gloucester House.—In the St. George's, Hanover-square, Committee of Works, Col. Ogilvy presiding, Mr. Walker asked the surveyor if he knew that there was a landspring in the house next to Gloucester House. Mr. Tomkins said he knew of it a short time ago. A builder made an application for permission to drain this landspring. It appeared that the medical officer (Dr. Aldis), reported to the vestry about this landspring in September and October, 1869.

Royal Architectural Museum.—We learn that a cast of the black marble tomb of Gundreda, wife of William de Warrene, and daughter of William the Conqueror, originally placed over her remains in the Chapter-house of Lewes Priory, has been given to the Architectural Museum.

The Inns of Court Hotel in Holborn.—This costly building, which was erected only a few years ago by the Lincoln's Inn Hotel Company, has recently been the subject of proceedings in Chancery, under liquidation, the business of the company having turned out an unprofitable speculation. The matter was before Mr. Church, the chief clerk, at the Chancery Chambers, on Tuesday, when it appeared that there were two offers for the absolute purchase of the establishment,—one by Mr. Sawyer for 50,000*l.*, and another by Mr. Brooke for 70,000*l.*, the object of the latter being to carry on the business of the hotel in conjunction with a number of the debenture-holders. The Chief Clerk adjourned the case in order to ascertain if Mr. Sawyer was prepared to make a further advance upon Mr. Brooke's offer, when it appeared he was; and the probability is that this building will shortly be purchased by new proprietors at the amount of its original cost. The Chief Clerk remarked that he should not sanction anything but an absolute purchase.

The West Ham Irrigation Scheme.—Mr. Robert Rawlinson, C.B., the Government Inspector, has held an inquiry at the town-hall, Stratford,

"in pursuance of the Local Government Act of 1858, and of a petition duly presented by the Local Board of Health for the district of West Ham, addressed to the Local Government Board, praying for the issue of a provisional order for the extension of their borrowing powers, in order to raise the capital required for the erection of sewage outfall and sewage distribution in the way of irrigation."

For this portion the Board propose to purchase, at a cost of 80,000*l.*, Dagenham Farm, situated at about five miles' distance from the parish. Captain Flowers, R.E., the sanitary engineer of the Lea Conservancy, was present. After a lengthened discussion, Mr. Rawlinson summed up by pointing out that at Leamington, Northampton, Birmingham, and other large towns, after thousands had been spent, irrigation had to be resorted to; that the pollution of rivers was a most important matter; and that they must adopt some means for getting rid of their sewage otherwise than by passing it into the Lea.

Opening of New Waterworks at Winster. The populous Peak village of Winster has been a scene of great rejoicing, the occasion being the inauguration of the water supply. An ample supply of water had been found on the estate of Mr. Thornhill, at Stanton, which that gentleman readily placed at the disposal of the committee, and voluntarily gave 50*l.* towards defraying the expenses of conducting it to Winster. Lord George Cavendish, M.P., the Duke of Rutland, Capt. Arkwright, M.P., and many other persons in the neighbourhood, liberally contributed towards the object, and the result is that the water has been conducted from Stanton (about two miles) in pipes; and this and the formation of a reservoir is estimated to have cost about 1,000*l.* The inhabitants have also materially assisted by their contributions and labour.

Decoration of St. James's, Tunbridge Wells.—The chancel of this church has been decorated by Mr. Samuel Fry, of South Grove House. On a red ground are painted the sacred monograms, so as to form a diaper over the walls, and between the windows are scrolls, on which are written parts of Psalm xxii. and Isaiah liii., suitable to the subjects portrayed in the windows. The roof, which is painted a dark plum colour, is relieved with outline drawings of yellow ochre. The central subject is our Lord in Majesty: on each side are angels with trumpets, and others with censers in the act of adoration. Farther away from the centre are others holding scrolls, and above the figure of our Lord in the centre panel is the symbol of the Godhead.

New Works and Extensions in Sheffield. Large extensions of existing works are being made, or have recently been effected, at Sheffield, according to the local *Independent*, which gives a lengthened account of them. By far the most important of the new undertakings are the works of Messrs. Brown, Bailey, & Dixon. These works are now in course of erection, and it is expected they will be in full operation within the next six months. They will be by far the largest that have ever been erected in Sheffield at one time, as they stand on no less than thirteen acres, and will give immediate employment to 1,500 workmen The works are at Attercliffe.

The Restoration of Paris.—The destination resolved on for the great buildings of Paris burned under the Commune is as follows:—The Hôtel de Ville will be rebuilt by the city; the Tuileries and Palais Royal by the State; the Palace of the Legion of Honour by subscription; the Caisse des Dépôts et Consignations by the society itself. The Cour des Comptes, the Grenier d'Abondance, and the Ministry of Finance, being totally destroyed, will be razed to the ground and the sites sold. M. Thiers is particularly anxious for the restoration of the Tuileries, and will himself shortly present a proposal on that subject. The pavilion by the side of the river will alone be preserved in its present state. The two others and the connecting walls will be pulled down, as they are so damaged as to be useless.—*Galignani.*

The Thames Embankment Line of Frontage.—In the St. George's, Hanover-square, Vestry, Mr. Farrer asked Dr. Brewer if a line of frontage had been defined on the Thames Embankment. He understood it was proposed to erect an hotel on the Embankment, close to the railway-station at Westminster Bridge, and that the superintending architect had defined the line of frontage. Dr. Brewer replied that the line of frontage had been defined, and the plan deposited with Mr. E. Hollis, the clerk to the Westminster Board. He might add that if they took Mr. Horsman's house as one plumb and the Board of Control as another, and struck a line on the Embankment, that would define the line of frontage. Mr. Farrer gave notice of a motion on this subject.

Technical Examinations. — The Council of the Society of Arts have come to the resolution,—"That the time has now arrived when the present system of examinations is no longer necessary, and that the encouragement of particular subjects, bearing especially on arts, manufactures, and commerce, should be promoted by special means." It will therefore be seen that, after the next examinations, to be held in April, 1872, the present system will cease. The Council have under consideration a scheme of technical examinations. It is proposed they should give notice annually of the three, four, or five manufactures which would be taken up the following year, with a slight syllabus of the examinations which would be held at a few convenient centres.

Land in Manchester.—The *Manchester City News* gives the following as the result of the sales by auction of real property,—land, houses, and chief rents,—in Manchester and its immediate neighbourhood, for 1871:—January, 26,322*l.* 10s.; February, 13,645*l.*; March, 35,050*l.*; April, 47,343*l.*; May, 56,952*l.*; June, 12,217*l.* 10s.; July, 121,145*l.* 10s.; August, 23,077*l.*; September, 22,769*l.* 10s.; October, 32,795*l.* 10s.; November, 19,937*l.*; December, 25,017*l.* 10s.: total, 436,277*l.* The plot sold in St. Ann's-square, which was free from chief rent, brought the highest price of the year,—at the rate, namely, of 67*l.* 13s. 9d. the square yard. A small plot in Princess-street, opposite the new town-hall, sold last week at the rate of 33*l.* 14s. 7d. the square yard.

Archæological Discoveries at Athens.—Some interesting discoveries have been made in excavations at the Ceramicon of Athens. Several tombs, some quite intact, have been brought to light, and among them, it is said, is that of two ambassadors of Corcyra (Corfu), who formed part of the deputation from Xenophon, sent to ask for the assistance of the Athenians against the Lacedemonians. Another bears the name of Hipparele, daughter of Alcibiades. Other researches have led to finding a monument, composed of five tombs, bearing inscriptions, and belonging to the Vexpleos family; and a sixth, ornamented with a basso-relievo composed of two women, one standing and the other seated.

Workmen for New Zealand.—We have had a large number of applications and letters, probably not fewer than a hundred, in consequence of mentioning in our last the report that agents from New South Wales were seeking to obtain the services of artizans for the construction of a railway in New Zealand. We have no further information on the subject. The persons concerned, if men are really wanted, should take means to make their address known.

Surveyorship.—Mr. Robt. Willey, M.R.I.B.A., of Ludgate-chambers, Ludgate-hill, has been appointed Surveyor to the Hand-in-Hand Insurance Office.

Settrington Church, near Malton.—The wall at the east end of this church has been painted in encaustic from designs by Mr. J. W. Knowles, of York. The space immediately above the altar-table, and extending across the chancel, has in the centre of it a Greek cross, between the arms of which are the emblems of the Evangelists, and on each side of the cross and at the extreme ends of the wall are borders in colours and gold, the spaces between having the Decalogue illuminated upon them. The dado underneath this design is of a deep red, diapered with a pattern of a pale shade of the same colours, black and gold, and the cornice which surmounts it, and is of stone, has been painted and picked out in gold and colours.

Victoria Park.—At last week's meeting of the Metropolitan Board of Works, a deputation, headed by Mr. C. Reed, M.P., expressed an earnest hope that the Board would recognise the importance of preventing any further building upon the open spaces immediately surrounding Victoria Park, and that measures would be taken for acquiring from the Government the land necessary for laying it out as a recreation-ground. A memorial embodying the views of the deputation was referred to the Works and General Purposes Committee.

Proposed New Buildings.—It is said that the late Baroness Weld has left the bulk of her property to Archbishop Manning for religious purposes. Among the special bequests are a large sum for the erection of a Roman Catholic church at Oxford; 7,000*l.* for the erection of a mortuary chapel in memory of her son, the late Captain Weld; various sums for the building of churches at Newbury, Twickenham, and London, and also for chapels in Surrey and Berkshire. Mr. Welby Pugin is named as architect to the whole of the buildings. The family threaten opposition.

New County Asylum for Lancashire.—There is at present in course of construction at Wittingham, near Preston, a large new county asylum for the pauper and other lunatics belonging to Lancashire, and which, it appears from a statement made at a meeting of the county magistrates held last week, will involve an expenditure of 120,000*l.* This is in addition to two other large establishments of a similar character which have recently been erected in the south-eastern and the south-western portions of the county, namely, at Prestwich, near Manchester, and at Rainhill, near Liverpool.

Improvements at Deal.—A block of houses, on the site of the old Navy-yard of the Government, is now in course of erection on the esplanade fronting the sea, called Prince of Wales's-terrace. These houses adjoin the picturesque Deal Castle, and will be completed in the spring, thus affording the seaside accommodation of private houses, boarding-houses, and hotel, so long required at this fast-rising watering-place.

The Power of the Diamond.—An interesting application of the material is furnished in the dressing of millstones. The intense hardness of the cutting material used,—the hard, black, uncleavable diamond,—is such that a single diamond has been employed for more than a year dressing a pair of French burr-millstones daily, without perceptible wear or diminution of cutting power.

Shaping Metals.—In a process lately proposed for shaping metals a mould is made in sections to suit the article required, and a sheet of metal is placed in it, after which a cover is clamped on to the mould, and water-pressure is conveyed to the interior by a pipe, whereby the metal is expanded to the counterpart of the mould.

A Year's Work by School Boards.—The *School Board Chronicle*, in surveying the work of the past year, finds that we have 330 school-boards, with others in course of formation. The great fact for rejoicing is that compulsory attendance at school is not likely to prove a difficulty, though at first it was the greatest bugbear.

Society for the Encouragement of the Fine Arts.—The first *conversazione* of the season will be held at the Suffolk-street Gallery on the 18th inst. On the 25th, a lecture will be delivered at the Gallery in Conduit-street on "Mexican Art," by Dr. Zerffi.

"Jack Plane."—We have received for Mrs. Randall from "An old Reader and Purchaser of the *Builder*," 1*l.* 1s.; from "R. T.," 6d.; and from "Four Sympathisers," 10s.

The Pugin Student's Drawings. — The drawings and sketches made by Mr. Ernest C. Lee during his tour as Pugin Student for 1870, have been exhibited on the wall of the Meeting Room of the Institute of Architects. A portion of them, viz., the series illustrating the Trinity Chapel and Corona, Canterbury Cathedral, have been presented to the Institute by Mr. Lee.

The Proceeds of the Passion Play.—The receipts at the late representations of the Passion Play at Ober Ammergau amounted altogether to 62,000 florins, of which 27,000 were given to the 600 actors, 1,200 to the poor, 3,600 reserved for public works, and 10,000 set apart for the construction of a theatre. The rest has not yet been disposed of.

The Proposed Cemetery at Clapton.—A letter has been sent by the Home Secretary to the promoters of the Clapton Park Cemetery Scheme, declining to approve of the proposed site for the purpose of a burial-ground. Mr. Bruce's decision has given great satisfaction to the inhabitants and owners of property in the district.

TENDERS

For the erection of a new parish church (exclusive of fittings and tower), at Uzmaston, Pembrokeshire. Mr. E. H. Lingen Barker, architect:—

Davies	£1,242 0 0
Harries	885 0 0
Lloyd & Lewis	852 0 0
Morgan & Jones	765 0 0
James	745 0 0

For new villa residence and stables, at Abingdon, Berks, for Mr. T. Townsend. Mr. Edwin Dolby, architect:—

Claridge	£1,728 0 0
Kimberley	1,650 0 0
Bryan	1,638 0 0
Honour & Castle	1,586 0 0
Johnson	1,578 0 0
Selby	1,561 2 0
Orchard	1,529 0 0
G. Jones	1,500 0 0
T. Jones (too late)	1,450 0 0

For the erection of 132 dwellings, in Ashfield-street, Liverpool, for the Liverpool Labourers' Dwellings Company. H. & A. P. Fry, architects:—

Roberts & Robinson	£21,795 0 0
Jones & Co.	21,540 0 0
J. & R. Duckworth	20,999 0 0
Rome	20,900 0 0
Mullin	20,720 0 0
Haigh & Co.	20,347 0 0
Urmson	20,329 0 0
W. & F. Witler	20,325 0 0
Gabbutt	20,100 0 0
Tomkinson & Co.	19,925 0 0
Thornton	19,800 0 0

For new church, Granard Park, Roehampton, for Col. Croll. Mr. Wm. Allen Dixon, architect. Quantities supplied:—

Eaton & Chapman	£2,450 0 0
Wicks, Bangs, & Co.	2,370 0 0
Manly & Rogers	2,247 0 0
Mann (accepted)	2,145 0 0

For additions, &c., to Prince of Wales Tavern, Camberwell. Mr. J. L. Stewart, architect. Quantities supplied:—

Clarke	£1,498 0 0
Smith	1,463 0 0
Ebbs & Son	1,313 0 0
Elliott	1,098 0 0
Wyatt	1,030 0 0
Gough	989 0 0
Blease	973 0 0
Poulson	959 0 0
Jerrard	894 0 0
Tapley & Co.	839 0 0

For taking up and relaying sewers, on the Harvey Estate, Leytonstone, for the Leytonstone Sewer Authority. Mr. John T. Bressey, surveyor:—

Cole	£375 10 0
Still	355 0 0
Dunkley	345 11 0
Ingham	333 0 0
Potter	324 0 0
Harris	319 0 0
Pizzey	295 0 0
G. Jackson	270 0 0
Hubbard	265 0 0
J. Jackson	229 10 0
Goodair	202 0 0
Sparrow	195 0 0

For stables, &c., at Old Ford, for the London General Omnibus Co. Under the supervision of Mr. P. Tosh. Quantities supplied by Mr. A. J. Bolton:—

Heath	£724 0 0
Aldous	721 0 0
Crabb	717 0 0
Blease	683 0 0
Vaughan	647 0 0
Adins & Son	647 0 0
Johnson & Co.	622 0 0
Ford	586 0 0
Atchinson & Walker	585 0 0
Garrud	537 0 0
Robbins & Co.	517 0 0

For coach-house, stables, and boundaries, at Hampstead, for Mr. James Harvey. Wm. Allen Dixon, architect:—

Wicks, Bangs, & Co. (accepted)	£912 0 0